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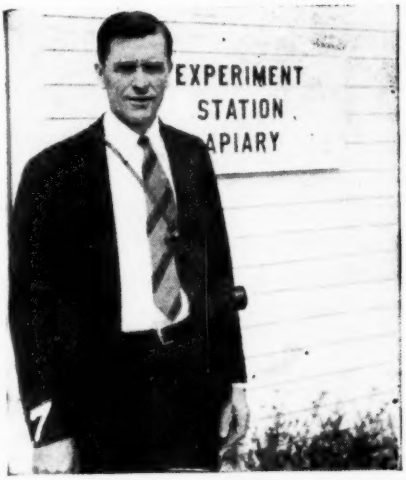


Dr. J. A. Munro

Some Physical Properties Which Affect The Handling of Honey*

By J. A. Munro

Entomologist NDAC Experiment Station,
Fargo, North Dakota

That the viscosity or "body" of honey can be expressed in units of measurement may be somewhat of a surprise to many. The fact is, the extent of viscosity or body in honey can be ascertained as definitely as weight which is expressed in pounds, distance in feet, or time in hours. Instead of using a set of scales, a foot rule, or time piece, we use an instrument called a viscosimeter to measure viscosity. This instrument records the degree of pull exerted by honey upon a graduated metal disk and by means of a conversion factor the recordings are translated to poises—the standard unit of measurement. Other viscous substances such as molasses, syrups, and oils are measured in much the same manner and expressed in the same unit of measurement.

The question may be asked, what does viscosity have to do with honey handling problems? The fact is that it has an important bearing on the rapidity and completeness with which the honey is extracted from the combs, the ease with which it is strained, especially when the improved modern methods are employed, and the facility with which it is poured into containers.

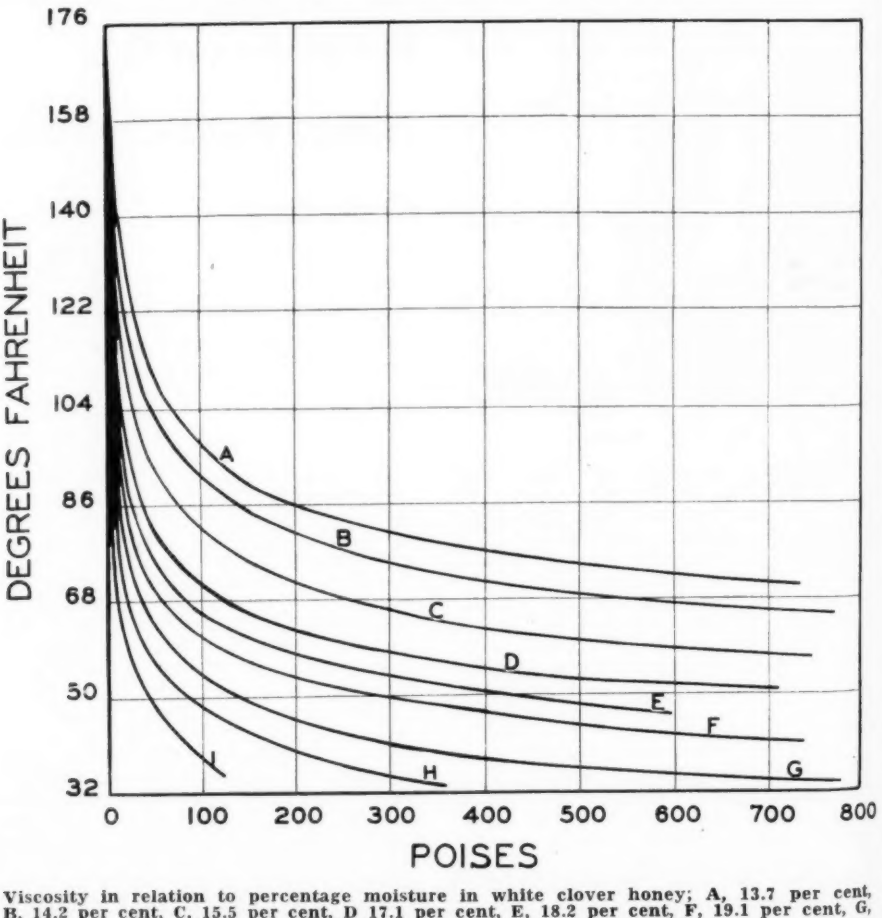
Beekeepers have long known not only that honey flows more freely when warmed but they have also learned, from sorry experience, that honey is readily injured by excessive heating; hence, it becomes a problem of practical importance to determine

*Sincere appreciation is expressed to Dr. E. F. Phillips, Professor of Apiculture of Cornell University under whose direction this investigation was made.

the temperatures to which honey may be heated to facilitate handling and yet not endanger its quality. Almost no measurements have been made on the changes in viscosity of honey on warming, even though from a practical viewpoint the changes which occur are known. It was felt that measurements of viscosity should be made, if for no other reason than to determine the temperatures to which honey of various floral sources and moisture content must be heated to put them into proper condition for handling.

In that the equipment used made it possible to study viscosity changes over a rather wide range of temperatures, it was decided to take the readings from as low a point as seemed practicable and on up to about 176 degrees F., which is higher than is ever necessary to heat honey in actual practice. In that details of the equipment used, methods involved, and results obtained are given in my article on the Viscosity and Thixotropy of Honey in the Journal of Economic Entomology for October 1943, only brief reference will be made to the findings in so far as they relate to the honey handling problem.

All told, six common American honeys, which according to their predominating floral sources were aster, buckwheat, sweet clover, white clover, goldenrod and sage, were tested. In addition, a sample of ling heather honey from England was included. In general, all honeys except the heather responded very much alike in viscosity measurements. For



Viscosity in relation to percentage moisture in white clover honey; A, 13.7 per cent, B, 14.2 per cent, C, 15.5 per cent, D 17.1 per cent, E, 18.2 per cent, F, 19.1 per cent, G, 20.2 per cent, H, 21.5 per cent, and I, 24.0 per cent.

the American honeys, the slight differences encountered were of no practical significance.

The two main factors affecting the viscosity of the honeys were moisture levels and temperatures. The influence of these two factors are well illustrated in the accompanying chart on white clover honey. This sample of honey originally contained 18.2 per cent of moisture but for the purpose of the experiments was adjusted to various moisture levels ranging from an extremely low moisture content of 13.7 per cent to an abnormally high moisture content of 24 per cent.

A glance at the chart shows that as the cold honey is warmed it undergoes its greatest decrease of viscosity with rising temperature and represents the most extensive reduction in viscosity per degree rise. Further warming of the honey is characterized by a rapidly changing rate of decrease to a point where the viscosity is sufficiently reduced for efficient handling of the honey. For honey of average moisture content this occurs at about 86° F. Further decrease of viscosity with rising temperature is so meagre as to be of no practical significance, except as might be necessary for melting crystals of granulated honey or the destruction of yeasts.

It is interesting to note that the temperature which marks the termination of rapid change in viscosity rate also marks the upper limit to which honey must be warmed for efficient handling. For honey with a high moisture content of 20.2 per cent this rapid change in viscosity rate terminates at about 68° F., while for honey with the exceptionally low moisture content of 15.5 per cent this occurs at about 98° F. From this it is clear that while ordinary summer room temperatures will suffice for honeys of high to average moisture content, that special warming may be necessary for the honeys of low moisture levels. It was found that for each one per cent decrease in moisture content of the honey a corresponding increase of 6.3° F. was required to effect similar viscosity. This relationship remained fairly constant as the different honeys were warmed to the point for satisfactory handling.

Of the various honeys tested, the ling heather sample was outstanding in that it showed a pronounced physical property of setting in jelly-like fashion after it had stood undisturbed for awhile. If the honey is slightly stirred, it then flows freely but will set again. This peculiarity of heather honey is due to the thixotropy, a condition which makes it necessary for this honey to be pressed from the combs instead of being removed by means of an extractor. Thixotropy, or the tendency of this honey to become jelly-like, is not due to a low water content but rather to the presence of colloids. Removal of colloids caused the jelly-like condition to disappear entirely. Only two of the American honeys were thixotropic; buckwheat honey showed a slight tendency, and sweet clover honey a mere trace but in neither was it sufficient to affect the handling of these honeys.

Overheating caused not only the usual darkening of color and burned flavor but brought about a permanent increase in the viscosity of these thixotropic honeys. For heather honey the viscosity became less with temperature increase until 148° F. was reached, after which its viscosity suddenly increased due to coagulation of its colloids by the heat. The same situation developed in buckwheat honey when 169° F. was reached.

The amateur beekeeper imbeds some foundation.

The Fun of Keeping Records

By C. H. Pease

I couldn't keep bees without complete records because I can't trust my memory to keep tabs on the numerous and varied complications and the consequent manipulations necessary to cope with the activities of the bees.

The aims and objects of the small beekeeper differ so materially from those of the carload producer that the methods adopted by one are not suited to the other, the latter being in the business solely for the dollars and cents derived from it, while the owner of a few colonies keeps bees either as a hobby or as a supply of honey for his family and friends, with no thought of its being a means of livelihood.

I make a new record book every winter for use the following season, allotting one page to each colony, at the top of which, besides the colony number, is the age and pedigree of the queen. A column down the right side of the page is spaced off for symbols, or "hieroglyphics", depicting the set-up of the colony corresponding with the notation and date opposite. From these symbols I see at a glance, without reading a word, exactly of what the colony is composed, whether the queen is old or young, or a virgin, or if it is queenless and has a cell; also whether the colony is run for comb or extracted honey.

Don't get the idea that one minute of time is wasted in the bee yard to make these complete records. In my tool-kit is a compartment to hold this book, which is never used in the yard except for reference, and there are other pockets for a scribbling pad and pencil. The manipulations are hastily jotted down on the pad "any old way" and are not entered into the permanent book until at my desk in the evening, or at any convenient time, when I also decide, while con-

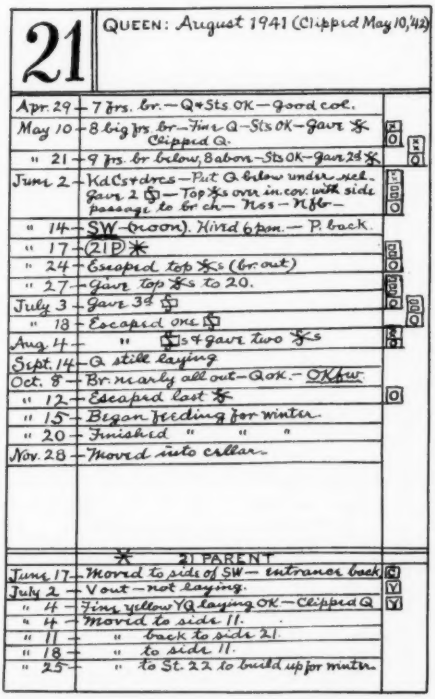
My complete record for 25 years.

ditions are fresh in my mind, upon the future treatment that each colony should have and when it should be administered, jotting them down on the pad for guidance at the next visit to the yard, as it is very important that certain things be done at certain times. Part of the joy of beekeeping is, to me, making plans at leisure, thinking out the details carefully, and working the plans when the time comes.

Besides the colony records through the summer season this booklet contains one page of wintering information, showing the weight of each colony when it goes into the cellar in the fall and also when it comes out in the spring, which tells me the amount of food each colony has consumed. This averages from 7½ to 9 pounds while the bees are in the cellar, and for the whole winter and spring it amounts to less than fifty cents per colony, average, in normal times when sugar costs from $4.50 to $5.00 per hundred. The lowest winter consumption of stores was in 1937-'38 when the average was only 6½ pounds per colony. My record books tell me that I have not lost a colony of bees from wintering in 21 years.

Two pages in the back of the book are devoted to "The Season" from which I am able to judge the earliness or lateness of the season, as compared with other years, and contains such items as the arrival of the spring birds, opening of spring flowers, especially the fruit bloom and the first white clover blossom, which tells me that in ten days supers for surplus honey should go on. Other activities throughout the season are also noted as they occur, from which interesting comparisons are made. And still another page is devoted to "Notes" under which head are written reminders for the next season and ideas learned from the past season's experience (and we learn something every year) which we try to put into practice the following season.

My system of beekeeping and record keeping is not applicable nor will it appeal to the carload producers with outyards; it is better suited to the "little fellows" like myself, whose bees are at their home place where they can look at them every day, if no more than after working hours in the late afternoon. In our little state of Connecticut with its approximate 2000 beekeepers only



21 QUEEN: August 1941 (Clipped May 10, '42)

Apr. 29	7 frs. br. — Q + Sts OK — good col.
May 10	8 big frs. br. — Fine Q — Sts OK — Gave ☆ Clipped Q.
" 21	9 frs. br below, 8 abov. — Sts OK — Gave 2d ☆
June 2	Kd Cs + drcs — Put Q below under xcl. Gave 2 ☆ — Top ☆s over in cov. with side passage to br ch — Nss — Nfb —
" 14	SW (broom). Hivd 6 pm. — P. back.
" 17	(21 P) ✱
" 24	Escaped top ☆s (br out)
" 27	Gave top ☆s to 20.
July 3	Gave 3d ☆
" 18	Escaped one ☆
Aug. 4	" ☆s + gave two ☆s
Sept. 14	Q still laying
Oct. 8	Br. nearly all out — Q OK. — OKfw
" 12	Escaped last ☆
" 15	Began feeding for winter
" 20	Finished " "
Nov. 28	Moved into cellar.
	✱ 21 PARENT
June 17	Moved to side of SW — entrance back
July 2	V out — not laying.
" 4	Fine yellow YQ laying OK — Clipped Q
" 4	Moved to side 11.
" 11	" back to side 21
" 18	" to side 11.
" 25	" to St. 22 to build up for winter

A page from my 1942 book.

six in the whole state own 50 colonies or more (these figures are from our state extension apiarist, Prof. L. B. Crandall).

To me it's worth a lot, not only for reference many times to what these records tell me, but it's part of the fun of my beekeeping after a hot session on the "battle front" in the bee yard to return to the "home front" and in the quiet of the evening, write the "communique" in the record book and plan the "strategy" for the next "battle".

The late John Burroughs once said: "He who cuts his own wood gets the heat out of it twice;" so I say: Beekeepers who keep complete records get the fun out of their hobby twice.

As to the abbreviations used in my record books, here they are:

Q—Queen; V—Virgin; OQ—Old queen; YQ—Young queen; dr—Drone; drc—Drone cell; C—Queen cell. c—worker cell; xcl—excluder; SW—Swarm. P—Parent colony; br—Brood; St—Stand; Sts—Stores; fr—Frame; hb—Hive body; brch—Brood chamber; S—Comb super; XS—Extracting super; ReQ—Requeen; Nss—No swarming symptoms; Nfb—No foulbrood; Kd—Killed; Ent—Entrance; OKfw—All right for winter.

Canaan, Conn.

Honeybees

Increase Clover Seed Production 15 Times

By
Departments of Zoology and Entomology,
and Agronomy
The Ohio State University

A tremendous "step-up" in legume seed production is needed. Increased production goals in Ohio for 1943 over 1942 call for 175 per cent more alsike seed, 94 per cent more red clover seed, 55 per cent more alfalfa seed, and 34 per cent more sweet clover seed. Larger acreages of legumes insure larger quantities of high protein forage for our livestock. Also legumes are the means of producing large amounts of "home grown nitrogen" in the soil. Full utilization of legumes to insure supplies of "home grown nitrogen" is especially important during war-time when chemical nitrogen is so urgently needed for war munitions.

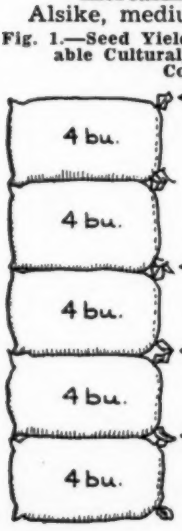
Low yields of seed in 1942, inadequate carry-over supplies of seed, and reduced legume acreages in 1943 make it imperative to build up seed stocks beyond the requirements for 1944, if we are to safeguard our food production goal in the war effort. Due to the general shortages of legume seed, farmers should find the growing of these seeds to be profitable.

Insect Pollination Vital Factor in Increasing Seed Yields

Alsike, medium red, white Dutch and Ladino clovers are practically self-sterile, and are dependent upon insect pollination to insure cross-pollination and subsequent seed set. Sweet clover, mammoth red clovers, and alfalfa, vary in their degree of self-fertility, but in all cases are dependent on insect pollination to insure self and cross pollination so necessary for profitable seed yields. The flower structure of all these legumes makes wind pollination a negligible factor.

The size of the pollination job for an acre of legume bloom is much larger than most of us realize. For example, an acre of alsike or red clover blooms contains 400,000,000 or 216,000,000 individual florets respectively. To have 100 per cent pollination occur each floret must be visited by a pollinating insect. Of course, under field conditions this would never happen. However, under experimental conditions where 100 per cent pollination took place with alsike clover bloom, yields varying from 12½ to as high as 20 bushels of seed an acre have occurred.

Fig. 1.—Seed Yields occurring with favorable Cultural, Soil, and Weather Conditions



20 bu. Alsike Clover seed per acre, with maximum insect pollination

12 bu. Red Clover seed per acre, with maximum insect pollination.

8 bu. Alsike Clover seed, practical, with dense honeybee population.

4 bu. Red Clover seed—Practical

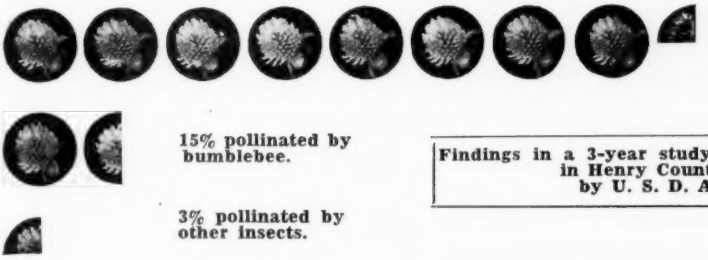
10-Year Average for Ohio:
Alsike Clover seed per acre, 1.6 bu. Red Clover seed per acre 1 bu.

Legume Pollinating Insects

The legume pollinating insects may be classed in two groups, namely: the natural pollinating insects over which we have little control; and the honeybee—the only controlled pollinating insect. The uncontrolled pollinating insects which play a meager role in legume pollination, are exemplified by the bumblebees, solitary bees, flies, butterflies, and moths. In 43 hours of collecting natural pollinating insects on alsike bloom in various counties, only an average of 9 insects were collected per hour. Where honeybees are plentiful, from 200 to 300 can be found in an hour.

The honeybee represents the only controlled pollinating insect and is ideally adapted to accomplish the pollination job. Its social organization makes possible the development of enormous colonies which may be placed in any desired location in the numbers necessary. The instinct

FIG. 2.—WHO ACTUALLY DOES THE WORK ON RED CLOVER BLOOM?



82% pollinated by honeybee.

15% pollinated by bumblebee.

3% pollinated by other insects.

Findings in a 3-year study on red clover in Henry County, by U. S. D. A.

of the honeybee to gather nectar and pollen along with its behavior of working every hour of the day when weather permits, are assets which very few other insects possess.

By skillful bee management it is possible to build the bee population of each colony to over 80,000 worker bees by the clover blooming season, and those colonies can be stimulated to deliver maximum pollinating services.

The density of the honeybee population and its constancy over a period of years should be of much concern to farmers. For each dollar that the beekeeper receives, fifteen to twenty dollars worth of pollination services are returned to agriculture. As long as farmers receive free pollinating services there is only one factor which will insure an adequate honeybee population, namely, the profitableness of honey production to beekeepers. It is of real economic interest that the density of the honeybee population increase as much as possible. Yet, at the same time, those bees should return profitable honey and beeswax yields to the beekeeper.

Utilization of Honeybees Solution to Pollination Problem

Experimental studies conducted by the Department of Entomology, Ohio Agricultural Experiment Station, show that seed yields are directly correlated with the density of the honeybee population.

The Station's experimental data relating to alsike seed yields can be taken as a general index of what will occur with the self-sterile group of legumes (see Table 1).

Because of the general impression that honeybees do not pollinate red clover, the data from Henry County in Figure 2 are presented as typical of the significance of the honeybee as a pollinating agent.

Extensive studies were carried on over a 3-year period involving detailed observations in fields of red

TABLE I.—OHIO STUDIES ON INSECT POLLINATION OF ALSIKE CLOVER. SEED YIELDS IN TERMS OF BUSHELS PER ACRE (By W. E. Dunham)

Year	County	CAGE TESTS			FIELD TESTS	
		Self-pollination where all pollinating insects were excluded from bloom	Self-pollination & wind pollination. All pollinating insects excluded from bloom	Maximum insect pollination honeybees	Natural pollinating insects & very few honeybees	Natural pollinating insects & honeybee populations of varying conc'tions
1936..	Wood...	.25		20.7		
1936..	Wyandot.	.06		15.2		
1938..	Logan..	.77*		16.6	.40	9.0
1938..	Marion ..		.47	16.6	.46	4.1
1938..	Miami ..					12.4
1938..	Putnam ..					5.5
1938..	Wyandot ..	.06		17.3	.64	4.8
1941..	Wyandot ..	.05		12.4		4.8

* Slightly larger yield due to pollination by thrips.

clover for each day of the second blooming period. The pollination of red clover by honeybees is incidental to the collection of large quantities of pollen, and nectar in small amounts. During the 3-year period, studies showed that more than four-fifths of the total pollination services were performed by honeybees.

Providing an Adequate Honeybee Population

Since the pollinating services from honeybees is free, the density of the bee population will be determined by the number of colonies that the community will support for profitable honey production. A commercial yard of bees, that is, 60 to 100 colonies of bees in one location, is about as dense a population as can be expected. A farmer having a commercial yard of bees on his farm and farmers close to bee yards should be urged to grow legume seed.

If all farmers would take advantage of the established bee yards it would be the most effective means of "stepping-up" legume seed production (Table 2). A farmer desiring to increase his legume seed yields, but who lacks the necessary pollinating insect force, could, in many cases, correct this limiting factor by offering a free apiary site as a special inducement to a beekeeper to establish a yard of bees on his farm.

In areas where there are no commercial yards of bees, a farmer is encouraged to own whatever number of colonies he can profitably care for. While this honeybee population is inadequate to do a good job of legume pollination, nevertheless, a sizeable increase in seed yields would result over yields where natural pollinating insects alone were depended on for pollination.

For the purposes of heavy seed production it may be desirable to increase the honeybee population to a degree where honey production becomes unprofitable. Such a program would necessitate the renting of colonies of bees during the blooming period of legumes, and might involve as many as four to five colonies per acre. Such a heavy concentration of honeybees would be especially desirable in cases where it seems highly important to make superior strains of legume seed rapidly available to farmers.

Conclusions

1. Farmers located near colonies of honeybees should make a special effort to grow legume seed.
2. Farmers wishing to grow clover seed but needing honeybees near their fields can induce a commercial beekeeper to move a yard of bees to his farm by offering a free apiary site.
3. Farmers are encouraged to own as large a number of colonies as they can profitably operate.

TABLE II.—CONCENTRATION OF HONEYBEE POPULATION BY COUNTIES, OHIO
Cooperating Agencies: State Department of Agriculture and Department of Zoology and Entomology, The Ohio State University

Below Average Concentration	Average Concentration	Above Average Concentration	Highest Concentration
Morrow	Union	Fulton	Wood
Knox	Crawford	Lucas	Seneca
Jackson	Lake	Hancock	Champaign
Carroll	Trumbull	Ross	Allen
Warren	Mahoning	Greene	Putnam
Clinton	Columbiana	Erie	Paulding
Perry	Stark	Huron	Van Wert
Brown	Delaware	Cuyahoga	Madison
Highland	Fairfield	Lorain	Henry
Adams	Licking	Fayette	Defiance
Pike	Clermont	Wyandot	Preble
Scioto	Richland	Hardin	Montgomery
Lawrence	Ashland	Summit	Darke
Guernsey	Wayne	Medina	Sandusky
Harrison	Holmes	Marion	Ottawa
Belmont	Tuscarawas	Hamilton	Mercer
Jefferson	Coshocton		Auglaize
Noble	Washington		Shelby
Monroe	Portage		Logan
Morgan	Geauga		Miami
Meigs	Athens		Clark
Gallia	Muskingum		Butler
Vinton	Hocking		Ashtabula
			Williams
			Franklin
			Pickaway

Honey Puddings

By Mrs. Benj. Nielsen

Now that sweet things are so limited—often impossible to buy—quite perversely many of us seem to possess an unreasonable yen for just those particular items. It is just contrary old human nature, I guess, to want that which is denied, limited, or hard to get.

So now it seems a good time to talk about puddings. Usually they are more or less on the sweet side and usually pretty much on the hearty, or shall we say "filling" side which is all to the good while wintry winds still hold sway and heavier types of food are necessary. We can indeed "kill two birds with one stone" so to speak. Satisfy that craving for sweets in a healthful way by pressing the old honey jar into steady use. And by skillfully combining expensive or rationed ingredients with plentiful, nutritious, and non-rationed goods we can still turn out tempting foods with the satisfaction of knowing that our families are well fed nutritionally speaking. A bit of honey, a bit of fruit— happy teammates in this never ending game of finding something good to eat (and good for you!) holding down food costs and staying within the point budget.

Four Square Pudding—Photo Courtesy Kenyon & Eckhardt, Inc.

In the Nielsen kitchen, the pudding field is one of the most satisfactory of all the fields of honey cookery exploration. It seems to offer practically endless possibilities. Not only does honey sweeten more satisfactorily (less is needed) but it imparts an appetite provoking flavor that is entirely lacking when sugar or corn syrup is used. This flavor property is an ideal way to point up or increase the tastiness of the more bland, inexpensive ingredients most of us have to use. Do try substituting honey for the sweetening in some of your own old favorite standbys!

For the most part, the puddings I have recommended this month are of the hearty filling type. Supplemented with a bowl of steaming hot soup, a leafy green salad, milk and a bit of honey bread, you have an excellent meal. The lighter ones such as Grapefruit Snow, Prune Whip, and Raspberry Whip are happy endings to a substantial meal.

Four Square Pudding

Six slices day-old honey bread, butter, ½ cup raisins, ¼ cup bran cereal, 2 egg yolks, ¼ cup honey, ¼ teaspoon nutmeg, 2 cups milk, 1 teaspoon vanilla, 2 egg whites, and 4 tablespoons honey.

Remove crusts from bread; spread with butter; cut into squares and arrange layers in a greased baking dish. Sprinkle each layer with raisins and bran cereal. Beat egg yolks; add honey, nutmeg, milk and flavoring; mix thoroughly and pour over bread. Bake in a moderate oven, 350 degrees F., about 35 minutes. Cover with meringue made from two beaten egg whites and 4 tablespoons honey. Bake in slow oven 300° F. about 20 minutes or until meringue is brown. Yield: 8 servings (1-inch baking dish.).

Baked Apple Pudding

Four tablespoons butter, 4 cups diced apples, ⅓ cup honey, ½ teaspoon salt, ¼ teaspoon cinnamon or nutmeg, ½ cup broken nutmeats, 2½ cups coarse honey flavored graham cracker crumbs, ¼ cup brown sugar, and ½ cup cream or evaporated milk.

Melt butter in 8-inch square pan; spread apples evenly in pan. Mix honey, salt and spice; spread over apples. Sprinkle with nutmeats. Thoroughly mix crumbs and brown sugar; moisten with cream and spread over first mixture. Bake in moderate oven, 375 degrees F., about 40 minues or until apples are tender. Serve hot or cold with plain or whipped cream.

Bread Pudding Deluxe

Two cups bread crumbs, two tablespoons melted butter, ¾ cup honey, 4 cups milk, 3 eggs, 1 teaspoon lemon extract, jam or jelly and 4 tablespoons honey.

Soak the crumbs in the milk for 30 minutes; beat yolks of eggs until thick and lemon colored; beat honey in gradually; add lemon extract and butter. Pour into greased baking dish and bake in a moderate oven, 350 degrees F., for about 30 minutes. Spread a layer of jelly or jam over the top. Then beat the egg whites quite stiff; beat honey in gradually and pile lightly on top of jam layer. Brown lightly in a moderate oven.

Steamed Honey Graham Pudding

One cup milk, 1 cup honey, 2½ cups graham flour, 1 teaspoon soda, ¼ teaspoon salt, and one cup currants or raisins.

Combine milk and honey mixing well. Add soda and salt to graham flour. Stir into honey milk mixture. Stir in fruit. Place in a greased mold or the top of a double boiler filling only ⅔ full. Steam for two hours. Serve with lemon sauce or whipped cream.

Honey Orange Tapioca

One and ½ cups water, ⅓ cup Minute tapioca, ⅓ cup honey, ¼ teaspoon salt, 1 cup orange juice, 1 tablespoon grated orange rind, ½ cup cream, whipped.

Place water in top of double boiler and bring to a boil over direct heat. Add tapioca gradually, stirring briskly. Then add salt and honey and bring to a brisk boil, stirring constantly. Place immediately over rapidly boiling water and cook 5 minutes, stirring occasionally. Remove from boiling water. Mixture will be thin but it clears and thickens as it cools. When slightly cool, add orange juice and rind. Chill; fold in cream. Pile lightly in sherbet glasses.

Just before serving, garnish with very fine shreds of orange rind.

Honey Baked Peach Tapioca

One-third cup Minute tapioca, 4 tablespoons honey, ½ teaspoon salt, ¼ teaspoon nutmeg, 2 cups canned sliced peaches, drained, 2½ cups water and peach juice, 1 tablespoon lemon juice, and 2 tablespoons melted butter.

Combine ingredients in a greased baking dish, mixing thoroughly. Bake in a moderate oven, 350 degrees F., about 40 minutes, or until done, stirring well every 10 minutes, and again when removing from the oven. Serve warm or cold with cream.

Honey Grapefruit Snow

One envelope Knox Sparkling Gelatine, ¼ cup cold water, ¼ cup hot water, ¼ cup honey, ¼ teaspoon salt, ¾ cup grapefruit juice and pulp (canned), ¼ cup orange juice, 1 tablespoon lemon juice, and 2 egg whites.

Soften gelatine in cold water. Add hot water and stir until dissolved. Add honey, salt and fruit juices (cut grapefruit sections in small pieces). Mix thoroughly. Turn into tray of automatic refrigerator. Turn up cold control. Do not freeze and when jelly begins to thicken, beat until frothy and then fold in stiffly beaten egg whites. Turn into mold that has been rinsed in cold water and chill. When firm, unmold and garnish with grapefruit sections, cherries or strawberries. Serve with custard sauce made from the yolks of the eggs.

Honey Prune Whip

One envelope Knox Sparkling Gelatine, ¼ cup cold water, ¾ cup hot prune juice, 1 cup cooked prune pulp, 2 tablespoons lemon juice, ⅓ cup honey, 2 egg whites, ½ cup nuts, chopped, and ¼ teaspoon salt.

Soften the gelatine in the cold water. Add honey, salt and hot prune juice and stir until dissolved. Add the prune pulp and the lemon juice. Turn into tray of automatic refrigerator. Turn up cold control. Do not freeze and when mixture begins to thicken, fold in stiffly beaten egg whites. Turn into mold that has been rinsed in cold water or into sherbet glasses. When firm, unmold and sprinkle with chopped nuts. Serve with or without whipped cream.

Honey Raspberry Whip

One envelope Knox Sparkling Gelatine, ¼ cup cold water, ½ cup hot water or hot raspberry juice, ¼ cup honey, 1 cup raspberry juice and pulp, ¼ teaspoon salt, 2 tablespoons lemon juice and whites of 3 eggs.

Soften gelatine in cold water. Add honey, salt, and hot water or hot raspberry juice and stir until gelatine is dissolved. Add lemon juice and raspberries which have been forced through a fine sieve. Turn into tray of automatic refrigerator. Turn up cold control. Do not freeze, and when mixture begins to thicken, beat until frothy, and fold in stiffly beaten egg whites. If a brighter color is desired, use a little red vegetable coloring. Turn into a mold that has been rinsed in cold water and chill. When firm, unmold. Serve with garnish of honey sweetened whipped cream.

From the Field of Experience

BEESWAX PRODUCTION IN 1943

According to the Semi-Monthly Honey Report, No. 614, of the War Food Administration, December 15, 1943, 4,901,000 colonies of bees produced 189,000,000 pounds of honey and 3,750,000 pounds of wax. See page 19 January issue.

The average yield per colony was 38.6 pounds of honey and about ¾ of a pound of wax. The total beeswax production was about 12% above 1942. The total honey production was about 6% above 1942.

According to these figures producers increased beeswax much more than honey production until for every 100 pounds of honey produced two pounds of beeswax were produced. But ¾ pound per colony is still not a high production. Since about one pound of wax from cappings can be secured for every 100 pounds of honey extracted and since the per colony production of honey was 38.6 pounds, the normal amount of capping wax per colony must have been .386 pounds or a little over half the total wax secured per colony. This would leave about a third of a pound to come from old combs. In other words, out of the two or more extracting supers of combs per colony, only one comb on the average was apparently melted up. Surely there are more poor combs in use that should be rendered. The per colony production of beeswax should run over a pound in 1944, and two combs melted up per colony instead of one, would do it. What winter work could be more patriotic or more profitable than sorting over the extracting combs and rendering those really not fit for further service? It is false economy to keep combs in use that may go to pieces in the extractor. Beeswax will not be selling at present ceiling prices indefinitely.

The figures may not be complete but the 1943 total production of beeswax for the states of Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida was 395,000 lbs. in 1942 and 442,000 lbs. in 1943.

In California alone the production in 1942 was 397,000 pounds; in 1943, 452,000 pounds. Ten states with their 1943 beeswax production follow:

California	452,000 lbs.
Minnesota	277,000 lbs.
Iowa	207,000 lbs.
Florida	197,000 lbs.
New York	194,000 lbs.
Idaho	186,000 lbs.
Wisconsin	171,000 lbs.
Michigan	165,000 lbs.
Ohio	161,000 lbs.
Texas	150,000 lbs.
Pennsylvania	138,000 lbs.
Illinois	119,000 lbs.
	2,417,000 lbs.

From one-fourth of the states, therefore, comes nearly two-thirds of the beeswax produced in the United States.

The twelve states having the greatest number of colonies of bees are not the same states although California leads with 448,000 colonies. The per colony crop of honey (and wax) varies as does the method of packing the honey. States producing more section comb honey or bulk comb honey do not produce as much beeswax as do those states in which the bulk of the output is honey extracted from the uncapped combs.

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OVER TWO POUNDS OF CAPPING WAX PER COLONY

From a producer's very interesting letter we quote:

"The total number of pounds of white honey extracted with the 45-frame radial extractor was 47,250. The cappings were well dried and yielded only 550 pounds of dark honey. The wax itself amounted to 660 pounds so far, but after I am through with the slumgum there should be a little over 700 for a total.

"It may further interest you to know that all this came from 300 swarms of bees. Two hundred and eighty of these were kept in the home yard, 20 were moved away four miles distant, the first adventure of this type since 1920 when we moved out fifty swarms. We still winter the bees in the cellar and they came out in very good condition last spring. Wintering has never been a problem through all these years."

From these figures there are some interesting summaries. First and foremost, 160 pounds per colony is a good record in any year—a won-

derful record in a year beset with as many difficulties as 1943.

Of special interest in view of the many reports on capping wax that have appeared in Gleanings, is the fact that 700 pounds of wax amounts to nearly 1½ pounds for each hundred pounds of honey extracted, or over 2 pounds per colony. If that fine record could be universal, the crop of beeswax in the United States would be nearly 10,000,000 pounds a year. Of course, comb honey producers, as a rule, use more beeswax than they produce. Taking 190,000,000 pounds of extracted honey as the 1943 crop, if this wax production could be universal, the production of beeswax from cappings would be nearly 3,000,000 pounds. Actually, the total production of beeswax is probably more than that because of the wax rendered from old combs.

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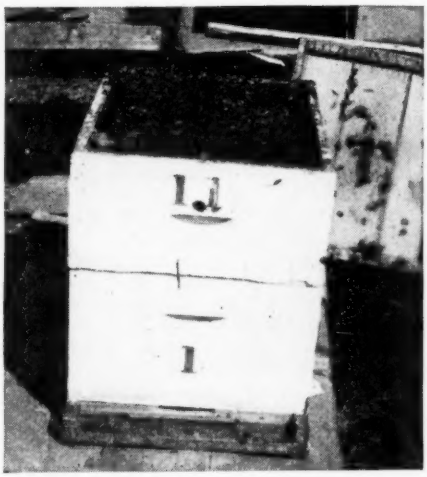
OUTSIDE WINTERING IN MAINE AT 41 DEGREES BELOW

By Charles A. Pinkham

[Article received November 2, 1943.—Ed.]

You printed an article in the December, 1942, issue of Gleanings describing the method I use to winter bees here in Maine. The following results were obtained this past season, after wintering by this method, the temperature reaching a record low for this locality of 41 degrees below zero. All colonies were prepared for winter early in December by placing each colony within corrugated pasteboard boxes, then placing several of these colonies close together, the several colonies being covered with tarred paper as a single unit. All colonies were two stories high, in 10-frame single wall hives with an upper entrance consisting of a ⅝ inch hole about 4 inches below the top of the hive. An air space of about 3 inches in depth was left between the corrugated boxes and the front of the hives.

All colonies were placed on the south side of a heavy pine growth facing the south. No other insulation or packing was used. The colonies weighed at least 120 pounds, in late fall. With the exception of an August swarm not properly fed in the fall all colonies came through in good condition. We had a very late cold and wet spring. This lasted right up to the first of June. On June 15 just at the start of the clover



A very populous two-story colony unpacked on March 30.

flow most of my colonies were right down to the danger point on stores. They had, however, built up very strong with bees. There remained an average of less than 10 pounds of honey per colony.

My best colonies then produced from 150 to 250 pounds of surplus honey each after leaving at least 60 pounds for winter. Having come through a winter like that I shall continue to use this method.

West Buxton, Maine

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ONE MAN'S OPINION

On the Management of Soil and Bees

I have just finished the latest agricultural sensation—"Plowman's Folly". Here is a book that recommends throwing away our plows, and managing our soil on a new theory of top mulching instead of turning under vegetable or animal matter. I don't know whether or not the author is or ever was a beekeeper.

After hundreds of years of soil management that has produced results, an idea is advanced that completely reverses all present known standards. Several people who have adopted the practice claim success, and many more have rushed into print with facts, figures, and general statistics to show that the author is not only all wet, but completely submerged. The experts who do the contradicting ought to know what they are talking about.

Probably the truth of the matter is going to be found somewhere

half-way in between. The truth will probably be that some types of soil can be managed that way, and some types of crops can be induced to yield much more than under present methods. In other words, some crops can be increased by handling the new way, but others would be total failures.

Like most new ideas, this one has at least one foot on established practices. The generally accepted method to bring a worn out soil back to productive bearing is through the use of cover crops, and a proper rotation that will build up the soil. The aim always has been to develop a top soil that is rich in plant food, and with a texture that will conserve the supply of moisture.

Yet as far back as I can find, the wise men have preached against the folly of leaving soil in such a condition that it will lose its fertility through erosion by wind or water. All good teaching has been to protect the land through appropriate covers.

Doesn't this sort of bring back a recollection that there are differences of opinion on the management of bees? Doesn't it seem to bring back memories of various schemes of bee management that succeed for one man and are a total flop for another? And doesn't it bring to mind some of the dizzy fads of the not so distant past, such as the practice of contracting the brood nest during the honey flow, and packing heavily for winter regardless of winter conditions?

The old saying is that circumstances alter cases. That is true. That is also the reason why beekeepers get big crops with methods the absolute opposite of neighbors having adjoining apiaries, but who get just as big crops nevertheless. As we progress in our efforts to improve our production we must keep constantly on watch for just such revolutionary changes as this one seems to be, yet we must not go ahead first into a thing until we are sure that we know what we are doing.

No—beekeeping is not different. We protect and coddle our bugs, other branches of agriculture have elaborate ways to destroy their bugs. But fundamentally the problems are identical. **The answer is to follow nature's way—but adapt it to our purposes.**

SECOND GLANCES

By C. M. Isaacson

A winter scene of an apiary always brings to my mind the seeming paradox of summer beneath the snow—latent energy waiting to pour forth from under a cloak of peace. Mr. Burke has furnished several excellent cover pictures for Gleanings.

The poisoning problem is becoming a serious one for beekeepers, particularly with the increasing use of dusts (page 1). As Mr. Eckert points out, while sprays can be confined very largely to the specific crops needing treatment, dust insecticides cannot be likewise controlled —wind, large quantity used, application from above, and so on, all contribute to spreading it over huge areas. Repellents are useless with dust, as well. Organization to educate the growers using the poison —and, when necessary, to apply a "firm hand" to check willful abuse —seems to be the most promising solution. Let us hope that peaceful ways can be worked out to solve this very real menace.

Beekeeping is worldwide (page 4). Altho methods in the Bahamas, as described by Ivor Claridge, are backward, evidently very real possibilities for expansion exist. That one statement—that **some** results can always be depended upon, should be an inducement to cause many to start.

Army life can be "sweet", as Carl Teasley can testify (or are puns "out of order"?). The article and accompanying pictures are of real interest, and show that our present Army is not an organization of **only** hard and fast rules, but has its human side as well (page 6).

Among adult bee diseases, Nosema appears to be the most serious. Dr. Farrar points out that it is responsible for many things often blamed to other causes (page 8). That it contributes heavily to queen supersedure and winter losses is a point to bear in mind —as is the only real remedy, keeping all colonies as strong as possible. The practice of keeping a reserve of queens is a profitable one in any case and doubly wise if Nosema is present to any large degree.

Home rearing of queens pays good dividends. I have used the method (described by Editor Deyell) for many years—it is simple and pro-

duces good queens. The **best** of swarm and supersedure cells, as used in this plan, nearly always result in long-lived and prolific hive mothers. I can also testify to his mention of the ease of introducing a laying queen to a normal colony (page 12).

Bees can pay—both in pleasure and profit. Mr. Kramer proves by accurate records what we all know (page 14). It would be of value for any beekeeper to keep like records on at least a few representative colonies, as a check—detailed records instead of only cumulative ones.

That Caucasians may vary in value according to the locality of origin may help to explain conflicting reports of experience with the race. Dr. Phillips' item (page 15) will help to make this clear, and also tells us that Caucasians imported for some time after the war may be of the poorer strain.

Don't heat honey unless you have proper equipment for doing so (page 16). Mr. Gardner is correct— I know that some honeys are very easily injured. I once ruined a can of extra fancy white clover honey (saved especially for home use) by improper heating. Remember the warning from this item.

Light and dark honey. Why the argument over the two? As "One Man's Opinion" says, let each sell on its merits. Blending, as practiced by most packers, is another practical solution. All honey is good honey to the right customer (page 16).

The government report on honey and wax production is well worth careful study. We should have definite facts on our industry "at our fingertips" for use when occasion arises. There is a lot of information packed into a small space here (page 19).

Beekeeping has a future (editorial, page 20). Write that in big letters where you can see it often. We need more bees and more beekeepers.

Another year is here. Another year with its chance for that bigger crop, for better methods of beekeeping, for harder work, and for even more effective support of the American Honey Institute. Remember that last—it is important.

Feeding Pollen and Soybean Flour

[Inquiries come in concerning the feeding of pollen and soybean flour in the spring. This information issued in April, 1943, together with Circular E-551 issued in March, 1941, and available at the Beltsville office should give complete information.—Editor.]

The production of brood late in winter and early in spring can be sustained and stimulated by feeding a mixture of pollen (25 per cent) and soybean flour (75 per cent). Brood production during this period will enable colonies to replace overwintering bees with young bees and will greatly help the colonies to develop to maximum populations for the honey flow. Colonies lacking a reserve of pollen or a suitable substitute often pass through periods of successive days during spring when they cannot fly to the field for pollen, thus bringing about curtailment of brood rearing and dwindling, with a result that the colony fails to attain a maximum population of field bees at the beginning of the honey flow. In too many cases colonies build up on the honey flow. This, however, defeats one of the purposes of beekeeping. The colonies become strong but there is no honey flow for them to work on.

Soybean flour supplemented by 25 per cent of pollen is also useful in developing new colonies and for starting package bees. In cases where a supply of pollen is not available soybean flour kneaded with a heavy sugar syrup to the consistency of queen cage candy (fondant like) can be fed provided the bees are able to get some pollen from the field.

Soybean flour made by the expeller process is better than that made by the solvent process. The following companies manufacture soybean flour by the expeller process:

Spencer Kellogg & Sons, Inc., Decatur, Illinois; A. E. Staley Company, Decatur, Illinois; Allied Mills, Inc., 3400 Board of Trade Bldg., Chicago, Illinois; Central Soya Company, Decatur, Indiana; The Glidden Company, 5165 West Moffat Street, Chicago, Illinois; I. F. Laucks Company, Inc., Portsmouth, Virginia.—United States Department of Agriculture, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, Maryland.

From North, East, West and South

NORTHERN CALIFORNIA, Jan. 4

Weather: December, 1943, was the driest December in the history of California. Beekeeping conditions, in many ways, were most unusual. The first part of December was warm. Eucalyptus had commenced blooming and bees were workng like mid-summer. In fact conditions were so advanced that even the beekeeper who practiced the "let-alone system" noticed the activity and was telling his neighbors how his bees were working; and finished by saying: "I would not be surprised to see a swarm any day." There was no danger of swarming but the heavy blooming of eucalyptus was encouraging his bees with a fine crop of pollen and nectar so that they had from five to eight frames of brood and were actually whitening their frames and instead of living on their winter stores were storing a surplus.

Conditions: Our tropical climate is liable to give us a surprise most any time. But never before have we had such a collection of surprises at one time. From being in a fine honey flow with bees in first class condition we are reduced to no activity at all. First to bring about such a condition was a history breaking wind storm that up rooted some of our finest trees and where the trees were not destroyed great branches of blossoms were torn from the trees. Rolled in great bundles they filled the streets and highways stopping transportation. Following on the footsteps of the storm came our worst grass and forest fire. The dense black smoke and the flames leaping from tree to tree was a sight not soon to be forgotten by the beekeepers of Alameda County, to say nothing of the losses of homes and bees.

Crop Prospects: Now that the fire and storm are past, our bees kept in their hives by cool weather and showers of the first days of January, we are trying to figure what the future will bring us. It is hard for the experienced beekeeper to decide that our 1944 crop must be a failure. Without eucalyptus it will be. One beekeeper tells us, "Nothing short of a miracle can produce a eucalyptus crop in 1944." To hope for a crop, nature must produce a new set of buds and blossoms. Nature can do it. So now we will wait to see how far nature will go toward producing that miracle.—Cary W. Hartman, Oakland, Calif.

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SOUTHERN CALIFORNIA, Jan. 12

Weather: We would say the weather has been almost ideal in so far as the beekeeper is concerned — not too cool and not too warm. Although we have had some "north wind", often an abomination in the drying out of moisture after a rain, it has not been damaging to any considerable extent thus far.

Market: Constant demand from buyers at ceiling prices for both honey and beeswax. Wonder why we see statements like this—average price for extracted honey, 13½ and 14c to beekeepers?

Miscellaneous: Bees are in great demand. It is the same old story. When honey is high in price many people want to get into the bee business and when the price is low they want to get out. The same conditions have happened several times during the past 45 years to our knowledge. One must stay in through thick and thin, produce all the honey he can as cheaply as he can, and the busy bee will always stage a comeback. True, we have many things to contend with and at present we would say the securing of competent help is the greatest. Wages not dreamed of a few years ago are being offered for experienced help in the bee yards. Bees are in excellent condition, honey plants are looking very promising, and, all in all, things are looking very good for the beekeeper during 1944.

Many thousands of acres that were burned over the past year are being sown to mustard, the seed being scattered by airplane.

This will make a quick growth and do much to hold the soil together and protect it from washing during the rainy season while the sages, wild buckwheat, and other natural honey plants that were burned over are staging a comeback as well as furnishing early "pasture" for bees.

It is interesting to note the demand for honey at ceiling prices with no distinction as to grade or color. Perhaps the buyer feels that the proportion of dark colored honey is so small as compared with the lighter colored honey that he can well pass up the matter of grades. —L. L. Andrews, Corona, California.

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TEXAS, Jan. 14

Weather: The bees are good weather prophets. Examination in late November found most colonies without brood, a thing almost unheard of in this part of Texas. The old timers said it meant an early winter followed by an early spring. We had the early winter and on January 11, 42 consecutive hives were weighed and examined. Brood rearing had begun so it looks like the bees and old timers agree. This winter has been cold but with no sudden cold snaps. A two inch snow fell over much of the southwest but it went in a shorter time than it took to fall but the added moisture was helpful. The ground moisture is sufficient for a spring honey flow. Horsemint seedlings are in every available place. Guajillo and mesquite made an abundant branch growth last fall and these shrubs should give a good flow this year.

Miscellaneous: Those who are trying to keep an exact record of beekeeping have a hard problem just now. They wish to know who is to be credited with the crop of honey gathered in North Dakota, with bees raised in Texas. They also believe a beehive must be looked upon as a tenement house as in a majority of cases not a single bee alive in the hive the summer of 1943, will be alive in the hive in the summer of 1944.

Everybody is trying his hand at the bee game. Have just learned of one sale of 300 colonies in old hives at $15.00 each cash. Package buyers have bought the right to shake bees from most of the smaller beemen.

The Texas beekeepers are scattered far and wide. Today we heard from three of them, each on a separate continent. When they get back what a wealth of information the young beekeepers will have about what the beemen of other lands do.—H. B. Parks. San Antonio, Texas.

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FLORIDA, January 5

Weather: So far we have had rather a mild winter here in Florida. Some cold weather with frost that killed part of the beans, tomatoes, cabbage, etc., in South Florida, but we have had no severe freezes that would injure citrus. It has been rather dry in some sections, but I see no reason why honey plants should not be in normal condition in the spring.

Bees: Bees are in fair condition in most sections. The fall flows were such that bees were able to store plenty for winter. A good many inquiries have been received from people who wish to buy bees, but there are no bees for sale.

Honey: All honey sold, except that held by parties who sell direct to consumer in small packages. Some beekeepers have contracted this year's crop at ceiling prices.

Labor: The labor shortage will be much more acute this year than last. Many beekeepers will be compelled to curtail their operations considerably on this account.—Robert E. Foster, Gainesville, Florida.

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MASSACHUSETTS, January 3

Weather: Temperature for December was colder than usual, Zero and below, with few days above 45 degrees. November was cold and rainy.

Honey Crop: More honey was produced than last year, with good colonies producing from 50 to 150 pounds. There was no "honeydew" or dark honey produced; the crop was amber to light of excellent quality.

Condition of Bees: Healthy colonies are in normal condition. Heavy brood rearing took place in late August and September, and the flow

was over in early October so all colonies have sufficient young bees to winter. Much A. F. B. was found in Middlesex County by Inspector Prof. Myron T. Bacon, of the Norfolk Agricultural School of Walpole. Several apiaries that had been neglected were in very bad condition, and those who just keep bees were practically wiped out. Colonies that have been badly poisoned by spray are soon robbed out and if these colonies have any brood diseases, whole apiaries may become infected.

Miscellaneous: The writer is not packing any single-wall colonies this winter, due to a lack of time and based on the results of last winter's experience with 10 colonies wintered with no packing and only the upper flight hole ½ inch in size. Inner covers, and several newspapers laid over this inner cover for insulation, and a good tight outer cover weighed down with heavy field stones is the only packing. Packed in this manner, these colonies had a flight period of an hour or more New Year's Day, while a few double wall packed colonies were unaware of a short period of sunshine.—R. E. Newell, Holliston, Mass.

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ONTARIO, Jan. 12

Weather: During the past two months the weather has been out of the ordinary—especially so when compared with conditions as they were a year ago during this period. That picture on the front page of January Gleanings could have been almost duplicated at any of our 25 apiaries a year ago, while today it would be quite easy to visit any of these apiaries with an automobile or any other conveyance. In other words, we have had a winter almost snowless. While the weather with us has not been extremely cold frost is penetrating to quite a depth and of course winter wheat, clover, and other hardy vegetation have no protection. A visit to many of our apiaries last week found everything normal in so far as we could see, and indeed barring any interference from outside sources, we would expect nothing else at this stage of the winter, as all are well supplied with stores and weather has not been unfavorable.

Miscellaneous: Today we opened up another account with our local bank—no, it was not because we had so much money coming in, but we had accumulated a few hundred coupons for honey sold, and they were deposited with the bank, which gave us credit for the same. Then I had to issue a check to the rationing board for the number of coupons deposited.

Judging by what local grocers tell me, honey is not moving any too freely since rationing came into effect. As mentioned in a former issue coupon D is good for several kinds of sweets. With sugar shortage, many use this coupon to buy honey. An effort is being made to have a special coupon for maple syrup and honey only, and if this is granted we feel it would greatly improve the situation in so far as honey is concerned.

Rarely in these columns do we quote extracts from other periodicals but for once I feel like giving a few thoughts on the term "pasteurization" as used today quite freely in discussing honey. The writer, Mr. Philip Bishop of Sackville, N. B., is a commercial beekeeper of splendid reputation and he knows what he is saying whenever he writes for publication. In the Canadian Bee Journal for December he says in part, "The whole idea of pasteurization of honey raises some problems. It might be better to have some other term used for this purpose. The average person thinks of pasteurization as a process used to make certain foods safe for human consumption. Honey is not a food which needs pasteurization to make it safe. Pasteurization temperatures have value in preventing spoilage through fermentation, but this is quite a different problem and should have a distinguishing term. The term 'pasteurized honey' is becoming increasingly familiar. There is danger that it will create a widespread misconception. I wonder what others think about this". We thoroughly agree with all Mr. Bishop says and we now say, "What do you think about it?"

While all good wishes to readers for the New Year are rather belated at this time we nevertheless take this opportunity to thank so many for the kind expressions of good will received during the past year, and we wish a Happy New Year to all.—J. L. Byer, Markham, Ontario.

National Beekeepers' Conference, Chicago, Jan. 11-13, 1944

From the standpoint of interest, attendance, and things accomplished, it can be said that this meeting, representing at least twenty states and the Province of Ontario, Canada, was a success. It was a pleasure to have with us C. A. Jamieson of Ottawa, Tom Shields of Toronto, and G. F. Townsend of Guelph, who contributed much to the meeting.

In this issue we will have space only for a few highlights. In a coming issue some further details will appear, with pictures.

This meeting reminded one of a three-ring circus in that at times three meetings were in progress simultaneously. This naturally complicates the matter of giving a comprehensive report.

James Gwin, Madison, Wisconsin, President of American Honey Producers' League, called the meeting to order.

Harold Clay, of Washington, D. C., in discussing the topic, "Government Orders Concerning Beekeepers", said that the problem of honey distribution is, "How can more honey be diverted to the city housewives?" At present, honey is flowing into rural rather than city areas. WPB has treated the beekeeper quite well. Honey containers will be available. Needs for beeswax should continue to be emphasized. Wax is more important than honey in war channels. Bees for pollination are by far the most important.

James I. Hambleton, Washington, D. C., in speaking of various experiments now underway said that no beekeeping project is ever finished. Research work needs to be scattered over the country to get a true picture of any situation. Strains of bees tested out at one of the field stations showed a difference of from 30 to 150 pounds per colony surplus honey stored. Much more work needs to be done along this line. Mismating of queens is common and hybrid bees may be the result of some queens mating twice. Artificial insemination of queens is useful for breeding purposes and it has been found that these queens are the equal of, and sometimes superior to queens normally mated. Some beekeepers are slow to take advantage of traps to collect pollen to mix with expeller processed soybean flour as a substitute for natural pollen in regions where it is scarce. The Madison station, by using artificial pollen early in the spring, can produce packages of bees as early as some of the Southern shippers. In time to come, Southern shippers may use artificial pollen, early in the season, in order to produce bees earlier than they are now available.

Tom Shields, from Toronto, Ontario, was called upon to comment on honey rationing in Canada. The War Price Trade Board in Canada is somewhat comparable to the OPA in the United States. Prior to honey rationing in Ontario made effective in late September, beekeepers were kept busy extracting honey all day in order to supply customers most of the night. One beekeeper got tired of working practically 24 hours a day, so locked up his place and drove off to the city for a day's vacation. When he returned late in the evening he found the road, lane, and yard around his house clogged with cars owned by people wanting honey. This beekeeper, after parking his car some distance from his home, managed to make his way to the doorstep of his dwelling house. He told the crowd in no uncertain terms that if they did not clear out of his premises in ten minutes he would shoot their tires full of holes with buckshot from his double barrel shotgun. Needless to say, the crowd was dispersed within the time limit. An appeal has been made to the Canadian War Price Board to increase the amount of honey allowed each customer and it seems likely this increase may be forthcoming in the near future.

Lewis White, a beekeeper from Portland, Oregon, reviewed the work of the Beekeeping Wartime Council, which was formed a year ago at the Chicago meeting. Mr. White made it plain that members of this committee were royally received and that the accomplishments were due in large part to a better understanding brought about between the committee and Washington officials.

Alan Root, Medina, Ohio, speaking on "How The Beekeepers' Supply Industry Committee Will Help Our Program", emphasized the fact that the organization of committees representing our industry that

were formed at the Chicago meeting a year ago was a big factor in gaining needed recognition at Washington for the beekeeping industry. Information presented by members of the committee regarding the value of bees as pollinators of fruits, vegetables, and clovers, also helped to focus more attention on the importance of our industry. The work done by the members of the Industry Committee has enabled beekeepers to obtain bee appliances and honey containers. A continuous contact with Washington is essential for the duration.

Mrs. Harriett M. Grace, Office Director of the American Honey Institute, Madison, Wisconsin, although not on the program, was asked to say a word concerning the work of the Institute during the past year. Many valuable contacts have been made with organizations handling and advertising foods. Honey is now receiving a great deal of publicity which will be needed, especially if the coming crop of honey should be above the average.

C. L. Farrar, Head of Bee Culture Field Station at Madison, Wisconsin, stated that Nosema is and has been quite common over the country. It shortens the life of the bee, also affects queen bees and drones. Thus far, no cure has been found. Mr. Farrar thinks that a good supply of pollen, or artificial pollen, as mentioned by Mr. Hambleton earlier in the program, tends to rear bees to replace those that die from Nosema. It appears that the chances of infestation of this disease in package bees is greater than in wintered over colonies because packages have an unbalanced condition.

Henry M. Bain, Washington, D. C., talking on "Future Needs of Beekeeping Organizations", was particularly interested in research work to be done on production and marketing of honey. Mr. Bain says that there are 10,500 farm marketing co-ops in the United States which cooperate with all existing agencies. He thinks co-operative marketing may come in the near future.

John Holzberlein, Jr., Grand Valley, Colo., gave a splendid talk on some modern methods of honey production, a review of which he has promised to send us to be used in a near future issue of Gleanings.

National Federation of State Beekeepers' Associations. Delegates from state beekeepers' associations met on the second morning for election of officers for 1944, also to work out a program for the coming year. Officers elected were: Oscar Schmidt, of Michigan, President; D. C. Stahlman, of Idaho, Vice-President. At that meeting, it seemed impossible to find a secretary and treasurer. At a later meeting, V. G. Milum, Champaign, Illinois, was recommended. Dr. Milum said he might consider the office if his present work would permit. It was suggested that the President, Oscar Schmidt, also Dr. E. F. Phillips, of Cornell University, make the proper approaches to Dr. Milum's superiors in order to secure his services, if possible. This would mean that timely information selected from various sources would be published in pamphlet form, to be sent to secretaries of associations for dissemination to beekeepers over the country. This idea, if carried out, should certainly tend to bind the industry closer together.

The Beekeeping Wartime Council which was organized a year ago at Chicago as an **over-all organization** to coordinate the efforts of already existing organizations, elected Lewis White, of Portland, Oregon, President, and Roy Grout, of Hamilton, Illinois, Secretary. The Council again consists of five members of the National Federation of State Beekeepers' Associations, two from the Bee Industry Association and three from the American Honey Association.

Joseph F. Reinhardt, of Bozeman, Montana, was made Chairman of the Resolutions Committee which did some splendid work, of which a condensed report will appear in the next issue of Gleanings. Also, it is hoped we may have condensed reports from industry organizations, such as Bee Inspectors of America, with Charles A. Reese, Chairman; the Honey Industries Committee, Alan Root, Chairman; the American Honey Institute, Lewis W. Parks, Chairman, and the Honey Packers' Committee, John G. Paton, of New York City, Chairman.

A word of appreciation is due H. J. Rahmlow, Madison, Wisconsin, Chairman of the Organization Committee, for his untiring efforts in helping to make the meeting a success, also Chairman James Gwin for the manner in which the numerous sessions were conducted

Editorials

More Snow and Moisture Needed Government reports indicate a shortage of snow in the North for some areas. Snow is needed for protection of clovers against cold weather and heaving. Hives of bees covered with snow are likely to winter well, provided an ample amount of good stores are available.

Moisture conditions in the Pacific Coast States, the Southwest, and the Southeast are much better than in the Plains area from the Rocky Mountains to the Great Lakes. A number of states report the driest winter conditions on record.

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Regulations on Salaries and Wages of Agricultural Labor The War Food Administration has set up controls covering wages and salaries of agricultural labor when the amount of such wage or salary is less than $5000 per year.

The term agricultural labor includes the raising of bees which is described as "all activities customarily performed in connection with the handling and keeping of bees, including treatment of disease and the raising of queens."

The Regulation provides that salaries or wages of agricultural labor may be increased up to $2400 per year without approval unless the Administrator has issued specific wage regulations as to particular areas, crops, classes of employers or otherwise. No increase in salary or wage payments may be made to employees engaged in agricultural labor who receive payments or wages or salary in the amount of $2400 per annum or more, without the prior approval of the Administrator.

The Regulation states that approval for increases may be sought by sending an application to the Director, Office of Labor, War Food Administration, Washington, D. C.

The Act further restricts the decrease in wages and salaries below the highest salary or wage rate paid for such work in the local area between Jan. 1, 1942 and Sept. 15, 1942.

The above Regulation appears in the Federal Register of January 18, 1944.

Intensive vs. Extensive Beekeeping During the past few decades there has been a tendency to spread out, to have more hives of bees, in more locations, in order to produce more honey and make more money. This has resulted in a wider distribution of bees over given areas which has been beneficial from the standpoint of pollination. At the same time it has meant, in many cases, a higher operating expense, less efficient supervision of apiaries and perhaps lower per colony yields of surplus honey.

The present tendency is retraction—fewer apiaries, with more hives in each apiary which should mean lower operating expenses. Whether or not this results in a higher per colony production depends largely on the type of apiary management applied.

In the final analysis it is the high per colony average of surplus honey that counts. There is a vast difference between hives of bees and real colonies of bees. It is frequently possible to have perhaps a dozen very populous colonies that will actually store more surplus than three dozen colonies of mediocre strength.

It is intensive rather than extensive beekeeping that counts. In making this statement we do not wish to discourage the operation of outyards. What we are trying to say is—each beekeeper should aim to get maximum results from all colonies, which means intelligent apiary management.

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How Fast do Bees Fly? The answer depends on conditions. According to Research Bulletin No. 108 by O. W. Park of Iowa State College of Agriculture, "the average speed determined for the flight of worker bees during a calm was a little less than 15 miles per hour." It was found that when bees travel with the wind they attain less speed than when they fly against the wind, both in flying to the fields and on homeward trips. Apparently bees flying against the wind exert more effort than they do in flying with the wind and thus make better speed.

It was also found that, on the average, less time was taken on the homeward trip, than on the outward

trip. Bees flying to the fields may travel in a zigzag course, whereas, bees loaded with nectar, when flying to the hive, usually follow a course that is more or less direct.

Whenever we hear fabulous tales about honeybees flying 50, 75, or even 120 miles per hour, we should be ready to correct such statements.

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Proper Records as an aid to the Apiarist The above is the title of a paper given by N. L. Martin of Chas. H. Saunders & Company, Accountants and Auditors of Toronto, Ontario, at the recent beekeepers' meeting in Toronto.

Mr. Martin emphasized the importance of **bookkeeping for beekeeping.** Adequate records showing details of assets properly classified, also debts or liabilities, are absolutely essential. The difference between the two represents the net worth of the business.

Proper records should be maintained for, (1) submission to a bank for credit purposes; (2) costs; (3) analyzing sales field; (4) insurance; (5) government information; and (6) income tax.

Chas. H. Saunders & Company is prepared to create an organiaztion, The Honey Producers' .Accounting Bureau, which will offer beekeepers of Ontario a complete bookkeeping service. It would seem that Canadian beekeepers would be benefited by taking advantage of this service. Beekeepers in the U. S. A. also need bookkeeping for beekeeping.

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Adequate Honeybee Population Essential for Pollination The article in this issue, page 46, entitled "Honeybees Increase Clover Seed Production 15 Times," should be read, then reread. In some clover areas, these plants are becoming so scarce, due to a change in crop rotation, that commercial beekeepers are moving their bees into other localities where nectar is more plentiful. This is an unfortunate situation for beekeepers, farmers, and fruit growers in areas where shortages of bees occur.

The honeybee population over the country is already inadequate to do a thorough job of pollination. It is estimated that on the basis of 4,900,000 colonies of bees in U. S. A. there are approximately 245 acres of farm land per colony. This includes highways and railroad right-of-ways. However, the estimated number of colonies of bees does not include those in trees and between sidings of buildings. (It would be interesting to know this number.) The farmer should be made to realize that bees are essential as pollinating agents, and actually increase farm income. The beekeeper and the farmer are dependent, each on the other, for success. The farmer receives free pollinating services and the beekeeper secures crops of honey.

In the future the farmer, in order to have bees for pollination, must plant enough nectar secreting legumes to make commercial beekeeping profitable. In so doing the farmer will also profit because his soil will be enriched.

Beekeeping is an important and essential branch of agriculture. Beekeepers can perhaps do more than they are doing at present, to get this fact across to the farmer.

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"New Sweet Clovers For Every Need" The above is the title of an article which appeared in the January, 1944, issue of "Successful Farmer," by E. A. Hollowell, U. S. Department of Agriculture.

Some farmers are dissatisfied with ordinary clover seeds now grown and are turning to other legumes such as alfalfa and red clover, not realizing that higher yielding varieties of sweet clover are now available.

According to Mr. Hollowell, there are three new superior varieties of sweet clover, Evergreen, Spanish, and Madrid, which have proved their value in extensive tests at Columbus, Ohio, Lincoln, Nebraska, Manhattan, Kansas, and Ames, Iowa.

Evergreen is a variety of biennial white sweet clover, is rank in growth, and provides grazing three weeks longer than common white sweet clover. It blooms during July and August when some of the other pastures are becoming short. This clover is one adapted throughout the Corn Belt and the Eastern edge of the Great Plains States, although it has been found that large yields may be obtained in the Inter-mountain States.

Spanish is also a biennial sweet clover, being somewhat later than the common biennial white. It is

quite vigorous and somewhat tolerant to heavy fall frosts. It is an excellent seed producer.

Madrid is a biennial yellow sweet clover and combines high yield with early seeding vigor. The seed originally came from Spain.

Following World War I, the status of sweet clover changed rapidly from a weed to a most excellent plant for green manuring and temporary pasture in the Corn Belt States. After a time, prices of sweet clover dropped and the farmer produced less seed. During recent years, much of the sweet clover seed has become a mixture of white and yellow and is not so productive as was the sweet clover formerly grown. Farmers are now asking for higher yielding varieties of sweet clover and it would seem that the new varieties that have been developed recently are an answer to this demand.

In the interest of better bee pasture which is needed at present to help insure the future of our industry, also to increase the fertility of the soil for growing larger and better crops, every beekeeper should do everything possible to encourage farmers to grow more sweet clover, especially these new varieties.

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Hygroscopicity One of the properties of honey that has been recognized to a certain extent, but regarding which there is little exact knowledge, is its power to absorb and retain moisture. This is known technically as "hygroscopicity." This behavior must be reckoned with in the storage of honey. When stored at comparatively low temperatures under moist atmospheric conditions, moisture is absorbed and dilution of the honey takes place, which in turn tends to promote fermentation. On the other hand, storage under conditions of low atmospheric humidity will result in loss of moisture from the honey, so that it tends to become heavier in body.

The relative ability of the different kinds of sugars to absorb and retain moisture has been investigated to a limited extent. It is known, for example, that levulose, which is the predominant sugar present in honey, is more hygroscopic than most other sugars. Browne has shown that under certain conditions honey is more hygroscopic than either invert sugar or levulose. A recent investigation carried out by the Bureau of Chemistry and Soils, U. S. Department of Agriculture, showed that at 68° F. honey of approximately normal composition tends to absorb moisture from the atmosphere when the atmospheric relative humidity exceeds 60%, and loses water to the atmosphere at relative humidity levels below 60%. When used in baked goods, honey was found to possess moisture retaining properties superior to a number of commercial sugar products commonly used in baking, and to be almost equal to levulose syrup (not a commercial product) from this standpoint.

This superior ability of honey to absorb and retain moisture suggests its suitability for use in a number of other industries, such as in the treatment of plug and cigarette tobacco, for chewing gum manufacture, and for similar purposes that require hygroscopic materials in order to prevent drying out.

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G. P. Walton Now With Food Distribution Administration Many of our readers will recall the excellent work which George P. Walton did a few years ago on honey chemistry and on honey utilization, under the direction of the Bureau of Chemistry, United States Department of Agriculture. More recently, due to war conditions, this work has been drastically curtailed, as has been announced in these columns.

Administrative decision has resulted in the decentralization of laboratory facilities and activities of the Bureau of Chemistry. Faced with the alternative of moving from Washington to the New Orleans Regional Laboratory of the Bureau of Chemistry, Mr. Walton preferred to transfer to the Food Distribution Administration of the War Food Administration. He is now with the Special Commodities Branch of FDA.

At present he is associated with Harold J. Clay, handling problems connected with marketing imported and domestic honey. Later he may also be assigned to aid in technological problems affecting chocolate or food products. We are glad that Mr. Walton's excellent abilities and background knowledge of the honey industry can continue to function in support of the honey business during the coming days.

Spinster Jane Says

If clover seed could be scattered broadcast over all the waste and ugly spots, where now nothing but weeds and trash are to be found, what a transformation there would be! And alsike clover would be our first choice, with sweet clover a close second. The air would be redolent with fragrance, and there would be a wealth of beauty all about us.

If only some philanthropic beekeeper could become a millionaire and do this one big deed in his own community, I believe it would be as fine a thing as building a library or donating a wonderful window in some church as a memorial. And this fine act would be emulated by others who love their homes and their fellow men. Shakespeare's spirit will pardon me for misquoting him in saying, "So blooms a good deed in an ugly world." And our sugar-short world would have a much superior sweet more abundantly.

Clover quotations—the first sign that spring will soon be with us—have just come to hand, and you will understand why I did not mention broadcasting "White Dutch Clover" when I tell you that the price of number one grade of that variety of clover is quoted at $110.00 per 100 lbs. On the other hand, Alsike No. 2 grade is only $27.00 per 100 pounds and white blossom sweet clover is within everyone's reach at $13.00 per 100 pounds. These two are the beekeeper's best bet.

Thanks to the wonderful field of sweet clover we had for two years in succession, it still grows on our hills and along the roadsides, bountiful Mother Nature bringing this miracle about, as she also does with alsike, in some mysterious way of her own.

We learned one lesson in sowing sweet clover. We did not sow it thickly enough. It branched out like young bushes and the stalks grew thick and woody. Had it grown more spindly, it would have been much more succulent and sweet as cattle feed.

The bees didn't have a great deal of nectar from the first growth as it had to be cut when first coming into bloom. They made up for this when it bloomed the second time and our late and supposedly darker honey was almost as fine as that first garnered by the bees.

Bees are discriminating, at least ours are. Where clover blooms, the bees will find it and will turn up their noses at all such strong nectar as found in buckwheat, goldenrod, and fireweed. I do believe the only reason they visit these flowers is to obtain pollen, the bread their brood must have when they appear in the springtime.

Will the scarcity of clover seed affect the price of the honey crop in 1944? Unless beekeepers buy early they will be unable to secure any quantity for sowing this spring.

The first part of the winter was very severe, the mercury dropping to 35° and 40° below. Then the weatherman relented and gave us mild sunshiny days all through the holiday season.

Let us fear only one thing this new year (and now I'm talking to old folk). Let us not become doddering, senile, old creatures, living altogether in the past. Let us rather, live every minute in the present, looking forward to a brighter and better future. Let us follow Longfellow's teaching:

"Let the dead past bury its dead,
Act! Act! in the living present,
Heart within, and God o'erhead."

John Wilbanks of Sarasota, Florida, and Walter Thomas of Medina, in Home Apiary of the A. I. Root Co.

Just News

The New Rochelle Beekeepers' Association will not hold their regular February meeting due to the number of prevailing colds and illness and the shortage of gasoline. Members will be notified by our Secretary-Treasurer, Mr. James A. Bailey, of the appointed place for our March meeting.—S. Barnes.

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Saturday, February 26, at 7 p. m. will be the date for the **Middlesex County Beekeepers' Association** get-together at 19 Everett St., Concord, Massachusetts. Mrs. W. Erwin Tilson of Mansfield will be the speaker for this occasion, and will give an instructive talk on cooking with honey. Corn bread, coffee, and casserole dishes for first course with comb honey and cherry and Washington pies for dessert will be features of the Ladies' Auxiliary supper. —A. M. Southwick, President.

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The Kansas State College at Manhattan is sponsoring a beekeepers' meeting to be held February 10 in Dickens Hall, in connection with Farm and Home Week. Dr. R. L. Parker, Professor of Apiculture and State Apiarist, has arranged an exceedingly interesting program which will include talks on timely topics by V. G. Milum, Apiculturist, University of Illinois; G. H. Cale, Editor of American Bee Journal, and Prof. L. R. Quinlan of Manhattan College. The program includes a visit to the Kansas Experimental Station and Apiary Building.

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Gaile M. Creger of Sioux City, Ia., for the past 20 years manager of the G. B. Lewis, Co., branch office, was fatally burned on December 10 in a honey processing plant.

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Midwinter meeting of the Nebraska Honey Producers' Association will be held on February 9 and 10, in Room 208, Plant Industry Building, Lincoln. President Ralph W. Barnes has arranged a program of unusual interest, including such speakers as Prof. F. B. Paddock, Iowa State Apiarist, R. F. Remer of the Sioux City (Iowa) Association, L. M. Gates, State Apiarist of Nebraska, F. L. Swanson of The A. I. Root Co., Council Bluffs, Iowa, and O. S. Bare, Nebraska College of Agriculture. Problems of beginners as well as more experienced beekeepers will be dealt with. A cordial invitation to all.

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The Empire State Honey Producers' Association at its recent winter meeting in Syracuse elected the following officers for 1944: President, George Rasmussen of Chazy to succeed Burel Lane who is the new chairman of the Board of Directors; Vice Presidents, John Rulison, Howard Grimble, and Ray Gutekunst; Secretary and Treasurer, Edward T. Cary. Among the speakers on the program were Dr. E. F. Phillips of Ithaca, N. Y., Alan Root, General Manager of The A. I. Root Co., Medina Ohio, A. C. Gould, N. Y. State Apiary Inspector, and Roy Grout, of Dadant & Son, Hamilton, Ill.

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Cuyahoga County Beekeepers will meet Sunday afternoon February 20 for their winter get-together in Carnegie Hall, Cleveland, at 2:30 P. M.

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The Ohio Beekeepers' Association at their annual winter meeting in December, elected the following officers for 1944: President, Emerson Long, St. Paris; Vice President, Lawrence Hicks, Columbus; and Secretary-Treasurer, W. E. Dunham, of Ohio State University.

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The Illinois Beekeepers' Association elected the following officers for 1944: E. F. Peterson, President; Clyde Wilde, First Vice President; Hoyt Taylor, Secretary; and Wesley Osborn, Treasurer.

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The Michigan State Beekeepers' Association will hold its winter meeting on Feb. 2 and 3 during Farmer's Week at Michigan State College in Lansing. H. H. Root of The A. I. Root Co., Medina, Ohio, is one of the out-of-state speakers.

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A CORRECTION—On page 16 of the January issue in the item by Chas. J. Koover, on gluing frames and supers, the last sentence of the second paragraph should read, "It takes but little time to daub some glue into each joint **before nailing.**" We make this correction in case some might think the frames or supers may not need nailing when using glue.

Asked and Answered

Nutritive Value of Wax

Question.—What is the nutritive value of wax in comb honey?—A. J. Bissinger, Iowa.

Answer.—So far as we know, the wax in comb honey has no nutritive value. When eaten in the form of comb honey, it serves as a roughage and if taken in moderate amounts, is not in any way detrimental.

The Aspinwall Hive

Question.—I have been reading about the Aspinwall non-swarming hive. Could you tell me where I could buy one and what the price would be?—Henry Hornberger, Okla.

Answer.—We would not know where you could obtain an Aspinwall non-swarming hive. While it did control swarming it was so expensive and cumbersome to handle that it was discarded some years ago. Supplying ample comb space which means putting on supers a little in advance of the time they are actually needed is one of the most effective methods of swarm control.

Dividing Colonies in Spring

Question.—I expect to buy some queens this spring to requeen some of my colonies and to make an increase. I expect to get them about May 10 in or near the fruit bloom. The plan I have in mind is to Demaree my strongest colonies taking about half of the brood. Then in about three or four hours when the young bees have got up to this brood I will take two or three frames for each queen and put them on the bottom boards filling the hives with some partly filled combs I have left from last fall. Then I can kill the old queen in the colonies that I wish to requeen and set the queenless colony on top with a piece of newspaper in between. The others I have after requeening I will give a frame or two of brood two or three times to bring their field strength up for the clover flow.—Jack Cady, Michigan.

Answer.—The plan of requeening which you propose may work to advantage if there is a good honey flow on at the time you perform the manipulations mentioned. If there isn't a honey flow on, the bees may get to robbing, especially when you give partly filled combs of honey to colonies that are being made up. You understand, of course, that a division that is made up on a new stand from colonies in the same yard has to get established and does not have old bees to defend the hive entrance. The old bees will return to the colonies from which they were taken. The handiest way to divide strong colonies and introduce young laying queens to the new divisions on new stands is to put the queens down below queen excluders at the beginning of the spring honey flow, then in nine days after the queens are put below, the brood in the hives above excluders will be sealed over. These upper stories may be lifted off onto bottom boards in the same apiary and supplied with covers. All queen cells that may be found in the combs should be destroyed and laying queens introduced. You will have practically 100% acceptance because after cells are destroyed, there will be no young larvae from which queen cells can be built and, therefore, the bees will likely accept the queens given them. This can be done very easily and without danger of getting the yard stirred up. Any combs of honey available should be given to colonies late in the evening to avoid robbing.

Uniting Queenless Packages with Weak Colonies

Question.—I have a couple of weak colonies and have ordered 3-lb. packages of queenless bees to strengthen them. Will you kindly advise me how to unite these packages with my colonies? Also, I have one colony queenless and rather weak and have ordered a 3-lb. package with queen. How will I go about uniting with the queenless colony.—C. V. Fossan, Minnesota.

Answer.—A queenless package of bees may be united with the weak colony after the bees in the package have been fed lavishly with thin sugar syrup made from equal parts of granulated sugar and warm water. It will do no harm to feed the bees in the weak colony at the time the queenless bees are fed. The bees in the queenless package may then be shaken in front of the hive containing the weak colony. These queenless bees will give the weak colony a tremendous boost. In a few weeks you will scarcely be able to recognize the colony, because the queen, in the meantime, will have an opportunity to extend her brood nest because she has an abundance of bees to take care of the brood she is capable of producing. To install the package of bees with a queen, in your queenless colony, the same procedure may be followed. The queenless bees in the hive should be disregarded. They will easily unite with the package of bees having the queen. The main thing to keep in mind is to feed the bees lavishly with thin sugar syrup before uniting.

Talks to Beekeepers

By M. J. Deyell

Success in beekeeping depends largely on knowing more about the inmates of the hive—the honeybee family. There are hundreds of beginners who are anxious to learn more about the queen, workers, and drones. It is hoped the following may be of interest to some experienced, as well as beginner beekeepers.

THE CITY OF THE BEES

A colony of bees is a little city in itself. It has regular streets and alleys for the passage of its inmates and those streets are kept clean. In some respects it is like the human kind but in another way it is organized on a different scheme that has for its goal the survival of the fittest irrespective of ethical or moral rights.

The House the Bees Live in

The house (the bee city) the bees live in is air cooled, or more exactly "air conditioned," in hot weather. The temperature inside is always the same, no matter how oppressively hot it is outside. It is thought that for thousands of years bees have known and used the science of ventilation and air conditioning. The wise man has said, "Thou sluggard, go to the ant." If he had said, go to the bees, he would have been wiser.

In the bee city there is no mayor or city manager, no city council, no political boss and while there is a queen she does not direct its policies nor its destinies. Nevertheless in all the realm of nature there is not a more efficient organization. Its police force is the best in the world—not for regulating the inmates of the city, but to keep out the burglars, the thugs and the racketeers. Let one of these approach the gates of the city, and, be it the naughty boy or one of its own kind, he or she will be so severely treated that they will retreat in utter rout.

The inmates are all for one and one for all. There is perfect co-operation and unity of action. There are no jealousies, no strifes for political preferment, no unions and no strikes. They co-operate and do not fight among themselves. They are intensely patriotic, and if need be will fight their enemies. Their prowess is not questioned by any living thing that creeps, walks or flies. Even man has a most wholesome respect for them. Man must deal with them if at all on their terms.

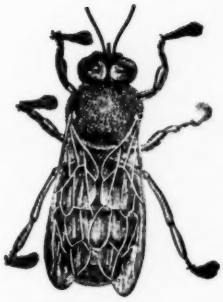
Their scheme for the division of labor is the best in the world. Every worker knows her precise job and does it without being told or shown by a superior, for there is no superior.

In this bee city there is no unemployment problem. Nor is there any unemployment or old age pension. None is needed. The population of this bee city is carefully regulated to the seasons and the amount of work to be done. This means, of course, a perfect scheme of birth control. When depression or a bad season comes the bee city stops raising more babies. When there is danger of the city starving the control bees will dump the half-grown babies (bees in the larval form) out at the city gate to die. If any of the full grown youngsters are crippled, sick or not fully developed, they, too, are shoved out of the city to die. In addition to all this, the old workers whose wings are worn out by toil are made to leave the city. If they do not go out voluntarily they are kicked out. What is the use, they say, of raising a lot of babies or cripples and keeping a lot of old folks that can't work any more? To feed the unborn and those that can't work might mean that all would starve. Every one works but father (the drone), and even he is ruthlessly kicked out when his services are no more needed.

If the queen does not rule nor boss, what does she do? She lays all the eggs, one or two thousand a day, and if she falls down on the job she, too, is kicked out and another takes her place. The slogan is efficiency. If you don't work or can't keep up your end of the job in that bee city you shall not eat and so the halt, lame and inefficient must die that others may live; and so the slaughter of the innocents goes on. This, in short, is the political economy of the bee city. In some respects it may be emulated by man. In others, it is too cruel and heartless. Man wouldn't stand for it, but he will receive a dole, even though in many cases able to work.

Worker

Queen



Drone

Interesting Facts About Bees

There are from 15,000 in the spring to 75,000 inmates during the height of the season in the bee city known as a "colony."

The Queen

Normally there is but one queen bee in a colony or city.

As a rule, two queens do not get along peaceably in the same city at the same time. One usually kills the other.

Queen mother, and queen daughter may, however, live peaceably together for some weeks; but mother-in-law and daughter-in-law, never.

When two queen bees start fighting they not only try to sting each other, but they will pull each other's hair in real woman fashion. The queen stings only a rival queen.

A queen-bee can lay her own weight of eggs in one day. She will lay, in the first two months in the spring, from 300 to 1000 eggs in a day; and in the next month, or just before the main honey flow, she may lay 2000 eggs a day. She can be the mother of 100,000 workers (undeveloped females) in one bee-hive. If the old bees did not die off at the age of a month or six weeks in the height of the honey flow she might have twice that number.

The same egg that will produce a queen will produce a worker bee in 21 days. The larvae of the worker bee is fed a coarser food by the nurse bees in the hive and for that reason it is not developed into a perfect female like the queen and not so quickly. In this way the bees can of their own will produce either a queen bee or a worker bee from one and the same egg.

The Workers

The life of a worker-bee in the Northern States, where the winters are cold, may be six or eight months, extending over the less active seasons of the year—fall, winter and early spring. But a worker bee hatched just at the honey-gathering season in summer is likely to wear out its wings and life in a few weeks in the intense work of filling the hive with honey. It often falls exhausted outside the hive and there dies. If it does not leave the hive the younger bees push it out of the hive as of no further use. If the old bees attempt to go back the young ones without gratitude or conscience, pick them up, carry them on the wing perhaps half a mile and then drop them. They can't walk back. They can't fly back, and so they die.

The bees that gather the surplus crop of honey do not eat it. The bees that eat it did not gather it because the generations change so rapidly. But the colony lives on. The same rule applies in the human family.

The Drone

A drone, which is a male bee, has no father; but, strange to say, he always has a grandfather (a maternal grandfather). The queen bee lays an unfertilized egg to produce a drone—a clear case of parthenogenesis, or virgin birth.

The drone bee is not permitted by the worker bees ever to live more than one season. He dies after mating with the queen, or is driven out of the city or killed by the worker-bees at the close of the honey-gathering season to save boarding him. He is a happy loafer, never working, always fed by others, a regular "man about town," until fall comes—and then suddenly nobody cares for father.

The drones are always killed off or starved by the bees themselves after the main honey flow unless the hive is queenless or has an unmated queen.

Buy and Sell Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 8 cts. per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We cannot guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C. O D. terms except where the buyer has thoroughly established his credit with the seller.

WE PAY CASH for extracted clover honey. Fair-Field Honey Company, Millersport, Ohio.

HONEY WANTED—State kind, quality, amount. Ellsworth Meineke, Arlington Heights, Ill.

WANTED—White and amber honey; any amount. D. F. Treap, 317 Keenan Ave., Cuyahoga Falls, Ohio.

HONEY AND BEESWAX—Highest prices paid. Mail samples, Advise quantity. BRYANT AND COOKINHAM, LOS ANGELES, CALIF.

CEILING price paid for Michigan clover honey, in sixty-pound cans. TOWNSEND SALES COMPANY, E. D. Townsend, Northstar, Michigan.

WANTED—Any kind of honey, dark, granulated or chunk. Send samples. Best prices. Louis Kapusta, 3705 West 14 Street, Cleveland, Ohio.

HIGHEST cash return made the day we receive your beeswax. Write for shipping tags and quotations. Walter T. Kelley Co., Paducah, Kentucky.

WANTED—All grades of comb and extracted honey. Bee supplies and honey containers for sale. Prairie View Honey Co., 12243 12th St., Detroit, Mich.

WANTED—We pay cash top price for clover honey in 60-lb. tins. Any quantity. Send samples and best prices. Cloverdale Apiaries, F. M. Babcock, Fredonia, N. Y.

HONEY WANTED—All Grades and Varieties. Highest Cash Prices Paid. Mail Sample. State Quantity. HAMILTON & COMPANY, 1360 Produce Street, Los Angeles, Calif.

HONEY AND WAX WANTED. All grades. Any quantity. Send samples and your best cash price. We carry large stock of Tin and Glass honey containers. ALEXANDER COMPANY, 819 Reynolds Rd., TOLEDO, OHIO.

WANTED white or light amber extracted honey from 1000 lbs. to a carload. Cash waiting. Send samples and best price to Honeymoon Products Co., 39 E. Henry St., River Rouge, Mich.

FOR SALE

FOR SALE—One new bear trap, 34 inch, $7.00. Fred Seefeld, Wesley, Iowa.

MY FAVORITE BEE VEIL. Write for description and price. G. M. Ranum, Mount Horeb, Wisconsin.

BEEKEEPER'S HOIST. Inspection easy. Spring delivery. $20.00. FOB. Corning, Iowa. Bee Turner.

QUEENBEE PAINTING outfits $1.00, colony records 10/15c, postpaid. Southwick Apiaries, Waban, Massachusetts.

YOUR WAX worked into quality medium brood foundation for 16c a lb.; 100 lbs. $12.00. Fred Peterson, Alden, Iowa.

FOR SALE—100 comb honey supers 4¼ x 4¼ x 1⅞, good as new, $1.00 each. Howard C. Coale, Bel Air, R. D. 1, Md.

EDUCATIONAL, Protective, APIARY SIGNS, twelve for $1.00, postpaid. Koenitzer, 1610 Humboldt, Manhattan, Kansas.

COMB FOUNDATION at money-saving prices. Wax worked at lowest rates. Comb and cappings rendered. Robinson's Wax Works, Mayville, N. Y.

MAKE YOUR OWN BODIES cheap, for Jumbo frames, or standard 8 frame. Details 50c. Satisfaction or money back. John Wharton, Greenville, Texas.

MOLASSES, pure New Orleans, Alabama Sugar Cane, $1.00, in 5 lb. pail, 15c packing charges; 10-lb. pecans, $3.25, f.o.b. Louisville, Ky. Lose Bros, 206 E. Jefferson.

FOR SALE—Two 8-frame power reversible extractors, with pulleys and connections. Roscoe F. Wixson, Dundee, New York

FOR SALE—200 two-story colonies of bees, guaranteed free from disease; 1935 Chevrolet 1½ ton truck. Oliver Stennett, Ceres, Calif., R. 1, Box 1270.

WRITE FOR CATALOG. Quality bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

FOR SALE—Eight frame Woodman extractor and stand, 55-gallon round honey tank, Brand capping melter, round honey strainer with fine copper screen. All equipment in good condition. S. E. Larson, Sanish, No. Dak.

SAVE MONEY by letting us work your wax into wired regular comb foundation. Large catalog describes everything. You pay only wholesale factory prices as we have no agents. Walter T. Kelley Co., Paducah, Kentucky.

BEES AND QUEENS FOR SALE

PACKAGE BEES and queens. Italian stock. Dependable service. Circular. Crenshaw County Apiaries, Rutledge, Ala.

BRIGHT ITALIAN QUEENS, $1.00 each. Ready in April. D. W. Howell, Shellman, Georgia.

HOLLOPETER reared Italian queens ready in May. White Pine Bee Farms, Rockton, Pa.

FOR SALE—Package bees, queens, and 3 frame nuclei. Write for 1944 prices. Walker Apiaries, Lexington, Texas.

250 two-frame nuclei, $4.50 each. No shipments. Get them in your own equipment. April delivery. E. E Salge, Weslaco, Texas.

CAUCASIAN bees and queens. Booking for shipment after May 10th. 2-lb. pkg., $3.50; 3-lb. pkg., $4.50. Lewis & Tillery Bee Co., Greenville, Ala.

THREE-BANDED ITALIAN queens, finest quality, extra good workers, 1-25, $1.10 ea.; 25-100, $1.05; 100 up, $1.00. Booking orders now for spring delivery. Alamance Bee Co., Geo. Elmo Curtis, Mgr., Graham, N. C.

FOR SALE—75 colonies, fully equipped, all other equipment and certificate of health. Write B. Leverette, 308½ Page St., Toledo, O.

FOR SALE—Green's queens are a little lower in price, but they are a little higher in quality. Price 75c. D. P. Green, Deland, Fla., Route 2.

FOR SALE—8 double hives with bees, certificate of inspection furnished. Two-frame extracter, honey tank. Other equipment. $150.00. Charles Young, 381 New Milford Ave., Dumont, N. J.

FOR SALE—1000 four-frame nuclei, two in a ten-frame hive body, with young queens ready to ship in May, 1944. also some two-pound packages and queens. Wm. Atchley, 132 Campus Ave., Upland, Calif.

BOOKING ORDERS for Italian queens. Shipping starts March 15th. Eighty cents each, nine dollars per dozen. Cash with order, satisfaction guaranteed. Walter D. Leverette Apiaries, P. O. 882, Fort Pierce, Fla.

CAUCASIAN-ITALIAN queens and bees for packages, for duration. 2-lb. package and laying queen $3.35. 3-lb., $4.35. Queenless packages, deduct $1.00 each. No extra queens. Miller Bros., Rt. 1, Three Rivers, Texas.

FOR SALE—700 hives of bees, 8-frame free from disease and in first class condition and equipment. Two large brick buildings, one new. The reason for selling I am not able to work them and my boys are drafted. C. G. Coggins, Argyle, Ga.

FOR SALE—31 colonies bees guaranteed free of disease; 10-frame hives with half story super above, 50 full-depth extracting supers and 15 shallow extracting. All equipped with three-ply Airco foundation. Also 20 comb section supers and equipment; 1 power three-frame extractor, and 150-gallon settling tank. R. R. Reames, Carthage, Ind.

OWING to sickness I am offering for sale one 800-colony outfit in modern equipment. Consisting of 3600 full-depth supers, trucks, concrete block honey house, latest extracting equipment, and all bees guaranteed free from disease. Same located in the Mid-central State in the Sweet Clover Belt. Terms to responsible parties. Gleanings, Box 15, Medina, Ohio

FOR SALE—Approximately 700 ten-frame colonies of bees with plenty of equipment, located in Northwestern Ohio.

HONEY WANTED
Carloads and less, all grades.
Will pay top prices.
Would contract now for crop.
Also Beeswax.
H. & S. HONEY & WAX COMPANY, Inc.
265 Greenwich Street, New York, N. Y.

CASH BUYERS OF HONEY
Carload or Less

B-Z-B Honey Company
Alhambra, Calif.
(Los Angeles County)

WANTED--Extracted Honey All Varieties
Send samples and delivered prices to
JEWETT & SHERMAN COMPANY
Cleveland, Kansas City and Brooklyn

MOUNTAIN GRAY BEES

No more orders for bees or queens accepted until further notice appears in Gleanings. Thanks to all our friends and customers.

BOLLING BEE CO.
Bolling, Ala.

CARNIOLANS
CAUCASIANS

Gentle, prolific, good winterers, wonderful workers, build up rapidly during Spring. A limited number of of 2-lb. and 3-lb. packages during May and queens of both races later.
Albert G. Hann, Glen Gardner,, N. J.

Three-Banded Italian Queens and Bees
Package Bees with Queen

Quan.	Queens	2-lb. pkg.	3-lb pkg.	4-lb. pkg.
1-49	$1.10	$3.45	$4.45	$5.45
50 and up	1.00	3.25	4.25	5.25

For Queenless packages deduct price of queen.
Best young queens—safe arrival.
HOMAN BROS.
Shannon, Miss., R. R. 2

HONEY WANTED
Carloads and less than carloads.
Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

1944 Prices

• • •

Italian Caucasian

• • •

	Queens	2 lb.	3 lb.	4 lb.	5 lb.
1-24	$1.10	$3.50	$4.50	$5.50	$6.50
25-99	1.05	3.35	4.35	5.35	6.35
100 up	1.00	3.20	4.20	5.20	6.20

We are already booked to capacity for next April and May. If we have a very favorable Spring we may be able to handle a few more orders, but cannot book any more at this time.

Will advise conditions later.

• • •

The Stover Apiaries

Mayhew, Miss.

EPHARDT'S CARNIOLANS

2-lb. bees and queens, $4.00 f.o.b.
3-lb. bees and queens, $5.00 f.ob.
Extra Carniolan queen, $1.25 ppd.
EPHARDT'S HONEY FARMS
Plaucheville, La.

BOOKED TO CAPACITY

on packages for this season.
Thanks.

THE CROWVILLE APIARIES
Rt. 1, Winnsboro, La.

Leather-Color Italian Bees and Queens
Good honey gatherers and gentle.
Guaranteed purely mated queens.
All package bees screened. No drones
We solicit your inquiry on quantity lots of queens.
M. I. TINDAL BEE CO.
Greenville, Ala.

BUY U. S. WAR BONDS AND STAMPS

Guaranteed free from disease. Two electric driven extractors, power capping knife, small steam boiler, storage tanks, one and one-half ton truck, all in good condition. Will sell as a whole or in part. Reasonably priced for early disposal. In care of "Gleanings," Box 19, Medina, Ohio.

MISCELLANEOUS

WANTED—To buy bees in Florida with location. Gleanings, Box 10, Medina, Ohio.

WANTED—Four-frame or larger power extractor. J. M. Elzinga, 14362 Longacre, Detroit, Mich.

WANTED—New or used observation hive. Harry Wigginton, 2204 Sunset Blvd., Steubenville, Ohio.

WANTED—100 colonies of bees, more or less, located in California, for cash. Harold Sundean, Rt. 4, Box 125, Santa Cruz, Calif.

WANTED—100 to 150 2-story 10-frame hives of disease free bees, including excluders; also other equipment. B. S. Redford, 84 Farragut St., Cradock, Va.

WANTED—Fifty or more 3-lb. packages of Italian bees, with the mother queens shaken in the packages, for April 20th delivery. L. S. Griggs & Son, 711 Avon St., Flint 3, Mich.

HELP WANTED

WANTED—Man with some bee experience. C. H. Schader, Sunnyside, Washington.

RELIABLE help for the production of extracted honey from 2000 colonies. Parent Apiaries, East Grand Forks, Minn.

WANTED—Experienced help. Give full particulars in reply. Board and room furnished. Theo. Keinath, Vassar, Mich.

WANTED—Several experienced, also inexperienced men in package bee and queen yard work. Stover Bros., Amory, Miss.

WANTED—Young men or women to assist commercial beekeeper, season March 1st to December. Charles Mraz, Middlebury, Vermont.

WANTED—Man with beekeeping experience as helper in bee supply and honey business. A. I. Root Co., 224 West Huron Street, Chicago, Illinois.

WANTED—Man with some experience to work with bees. Year around work for right party. Give particulars, etc. J. B. and C. J. Merwin, Grand Gorge, N. Y.

YOUNG MAN to assist in extracted honey production. 1,000 colonies. State age, size, habits, experience, and salary expected. Season April to November. Board and room furnished. Lavern Depew, Auburn, New York.

WANTED—April 1st, experienced bee man, single or married. Furnished apartment wtih modern conveniences available. Have 1000 swarms of bees in fifteen locations. Leroy C. Keet, Route 4, Watertown, N. Y.

WANTED—Several young men, desiring to learn beekeeping, as helpers, in our over-3000-colony outfit. Write, stating age and experience and wages wanted. Deferment possible. Board and room furnished. Chance for war factory jobs nearby during off season. Oscar H. Schmidt & Sons, Rt. 4, Bay City, Mich.

SEEDS

KOREAN LESPEDEZA high quality $3.50 Bushel. Hardy Alfalfa $19.50; Grimm $21.00. New Timothy $3.10. Sweet Clover, Scarified, $7.80; Unhulled, $4.20, Red Clover, $18.60. Clover-Timothy Mixed, $5.80. All Triple Cleaned. Guaranteed Satisfactory. Hybrid Corn, $3.25. Write Free Sample—Catalog. Frank Sinn, Box 482, Clarinda, Iowa

MAGAZINES

ABOUT 2c A MONTH brings you money-saving tips from experimental farm. One year 25c; 5 years $1.00. Subscribe! Poultry Tribune, Dept. 149, Mount Morris, Ill.

INTERESTED in Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, San Angelo, Texas, the only ranch magazine published serving the Angora Goat industry. Subscription—$1.50, Sample copy—fifteen cents.

READ the South African Bee Journal to be conversant with conditions from far afield. Subscription 5/ per year. For further particulars, write to the Hon. Treasurer, P. O. Box 43, Cleveland, Johannesburg, S. Africa.

WESTERN CANADA BEEKEEPER, official organ of the Manitoba Beekeepers' Association, one year, $1.00; in combination with one year's subscription to Gleanings in Bee Culture, $1.60. Wallingford Building, Winnipeg, Canada.

MANY BEEKEEPERS have proven raising fox, mink, nutria, muskrats, rabbits, highly profitable. Send dime for sample copy. Canada's oldest fur farming magazine telling how. Fur Trade Journal of Canada, Box 31, Toronto 2, Ontario.

THE BEE WORLD—The leading Journal in Great Britain and the only international bee review in existance. Specializes in the world's news in both science and practice of apiculture. Specimen copy post free, 12 cents stamps. Membership in the Club, including a subscription to the paper, 10/6. The Apis Club, L. Illingsworth, The Way's End, Foxton, Royston, Herts, England.

MAGAZINES—Business, Vocational, Diversion. Current single copies only. Choose from 566 different publications, covering advertising, confectionery, electrical, foods, health, horticulture, jewelry, mail order, music, photography, poultry, refrigeration, selling, vegetable growing, watchmaking, and more than 150 other fields. List with prices free. Commercial Engraving Publishing Co., 34M North Ritter, Indianapolis 1, Indiana.

Italian Bees and Queens

We can still handle a few more orders. Ten per cent books any order. Entire satisfaction is guaranteed.

2-lb. pkgs., 1 to 24, $4.00 each. Unt. Italian queens, 1 to 24, $1.25 each.

Valley Bee & Honey Co.

Weslaco, Texas

PACKAGE BEES

FOR MAY

We thank our loyal customers for making the year just closed the largest in our history for shipping package bees and queens.

Also for their confidence expressed by the booking, already, of even more packages for 1944.

We have increased our capacity for producing both packages and queens, by approximately one third, and are booked full for April and into May.

We are stream-lining production in an effort to serve the most customers possible, and will ship only Two-pound and Three-pound packages up to May 20. After then can ship Four-pound packages and Loose-queen type.

Orders accepted as received, for first available shipping dates, or returned with explanation.

MAY WE WISH YOU ALL A PROSPEROUS 1944.

THE PUETT COMPANY

Hahira, Ga.

PETTIT'S PACKAGE BEES

All Sold for 44.

Regret that we cannot accept more orders for 1944 than we have already booked.

Will try to have even more bees in 1945.

Morley Pettit

Tifton, Georgia, U. S. A.

Australian Beekeeping News
The Leading Bee Journal of the Southern Hemisphere is the

"Australasian Beekeeper"

Subscription 5 shillings per year. Start any time. Inquire for International Money Order for 5 shillings (Australian) at your Post Office.
Write now to the Editor. P. O. Box 20. West Maitland New South Wales Australia

BUY U. S. WAR BONDS AND STAMPS

YORK'S PACKAGE BEES AND QUEENS

For 1944

Quality Bred Italians

We are now booking orders for spring delivery and expect the demand to surpass the past season which was the greatest we ever had. Place your order now without delay.

QUEENS AND PACKAGE BEES WITH QUEENS

Quantity,	1 to 24,	25 to 99	100 up
Queens	$1.10 each	$1.05 each	$1.00 each.
2-lb. Packages	3.65 each	3.50 each	3.35 each.
3-lb. Packages	4.75 each	4.55 each	4.35 each.

For larger packages add the difference between 2-lb. and 3-lb. packages for each additional pound of bees. Order direct from this advertisement and save time. Yours for full weights, quality bees, young queens and satisfaction.

YORK BEE COMPANY, JESUP, GEORGIA, U. S. A.

(The Universal Apiaries)

First Quality Italian Package Bees and Queens

	(1)	(10)	(50)	(100 and over)
2 lbs. with queen,	$4.25	$4.00	$3.60	$3.40
3 lbs. with queen,	5.25	5.00	4.50	4.25

Extra queens, $1.25 each.

Terms: 10% down to book your order, balance 10 days before shipment. Payable in U. S. Funds.

Book your order early and avoid disappointment.

ALBERT KOEHNEN, Live Oak, Calif.

BETTER-BRED QUEENS---Three-Banded Italians

We can supply a limited number of packages at the following prices:

	2-lb.	3-lb.	4-lb.	5-lb.
Packages with queens,	$4.00	$5.00	$6.00	$7.00

Queens, $1.25 each.

One - half deposit required for booking orders.

CALVERT APIARIES, Calvert, Alabama

Wanted White Extracted Honey

Send Sample and best price Frt. Paid to Cincinnati, O.

THE FRED. W. MUTH CO.

Photo shows portion of our queen bee yard containing over 6000 nuclei.

ITALIAN PACKAGE BEES AND QUEENS

2 lbs. with queen, $4.00; 3 lbs. with queen, $5.00

By express.

Extra queens, $1.25 each.

OVERBEY APIARIES, BUNKIE, LA.,

---

* * PACKAGE BEES QUEENS * *

The following prices will be effective until further notice.

Quantity	Queens	2-lb. Pkgs.	3-lb. Pkgs.
1-24	$1.10	$3.50	$4.50
25-99	1.05	3.35	4.35

During late February we will consider acceptance of small orders if conditions permit.

BESSONET BEE CO., DONALDSONVILLE, LA.

PURE ITALIAN QUEENS

1 - 49, $1.25; 49 - up, $1.10

15% will book your order.

MIDDLE TENNESSEE APIARIES

JOE B. TATE & SON

1029 North 4th St., Nashville, Tenn.

PACKAGE BEES AND QUEENS

Leather Colored Italians Bred for Production

Prices of Package Bees with Queens			
Lots of	2-lb.	3-lb.	Ex. Queens
1 to 24	$4.00	$5.00	$1.25
25 to 99	3.85	4.80	1.10
100 or more	3.75	4.70	1.10

Terms: 25% deposit to book order, balance ten days before shipping date. We replace any bees that die in transit if it is our fault, if it is the carriers fault, file claim with them. We start shipping February first.

THE ISLAND APIARY

Collier City, Fla.

..Ironsides Foundation..

(patented)

Besides being vertically wired the ends are metal-bound, giving you a wonderful comb after the bees draw it out. Tough and straight as a board. For use in split bottom bar Hoffman frames.

Once used - ALWAYS USED

Sheet sizes 8½ x 16¾

10 sheets $1.35
50 sheets 6.50
100 sheets 12.50

(plus postage)

Send for complete price list on bee supplies.

The Fred W. Muth Company

229 Walnut St. Cincinnati, 2, Ohio

GASPARD'S QUALITY ITALIAN PACKAGE BEES AND QUEENS

THANK OUR MANY FRIENDS FOR THEIR PATRONAGE IN THE PAST
BUT WE ARE NOT BOOKING ANY MORE ORDERS
UNTIL FURTHER NOTICE

J. L. GASPARD, Hessmer, La.

QUEENS

Italians **Daughters of Queens Bred for Resistance** **Caucasians**

PACKAGE BEES

Prices on Package Bees With Queens

Lots of	2-lb. Bees	3-lb. Bees	Extra Queens	For Tested
1 to 24	$4.00	$5.00	$1.25	queens double
25 to 99	3.80	4.80	1.15	the price of
100 or more	3.70	4.70	1.10	untested.

BOOKING ORDERS NOW

Over 25 year's experience shipping. Paying 43½ cents a pound for Beeswax in exchange for bees and queens. If you have over 50 pounds, write for shipping instructions. We replace any bees that die in transit if it is our fault; if it is the carrier's fault file claim with them.

Send for FREE CIRCULAR

BLUE BONNET APIARIES, Rt. 1, Box 70, Mercedes, Tex.

QUALITY PACKAGE BEES AND QUEENS

We have discontinued booking orders until further notice in the bee journals.

Prices for 1944:

	2 lb. with Queen	3 lb. with Queen	Single Queens
1 to 10	$3.45	$4.45	$1.05
11 to 24	3.35	4.35	1.00
25 to 100	3.30	4.30	.95
100 and up	3.20	4.20	.90

GARON BEE CO., DONALDSONVILLE, LA.

Telephone 8614 Telegrams, Western Union

The Hubbard APIARIES

WRITE FOR FREE CATALOG

Quality Bee Supplies Factory Prices
Prompt Shipment from Stock
Satisfaction Guaranteed

THE HUBBARD APIARIES

Manufacturers of Bee Supplies

ONSTED, MICHIGAN

Root QUALITY BEE SUPPLIES

EVERYTHING FOR THE BEEKEEPER

Best By The Bee Test

SEE YOUR ROOT DEALER AT ONCE ABOUT YOUR BEE SUPPLY NEEDS FOR 1944.

SEE FULL PAGE ADVERTISEMENT IN THIS ISSUE

• • •

The A. I. Root Co. of Iowa.
COUNCIL BLUFFS, IA.

A. I. Root Co. of Chicago.
224 W. Huron St.
CHICAGO, ILL.

A. I. Root Co. of Indianapolis.
121 N. Alabama St.
INDIANAPOLIS, 4, IND.

A. I. Root Co. of Syracuse.
1112 Erie Blvd., East
SYRACUSE, 3, N. Y.

The A. I. Root Co., 12 W. 21st St., New York, 10, N. Y.

YOUR GOOD WILL

The most valuable thing we have is your GOOD WILL. It's been 85 years in the making, and without it we couldn't have been in business today. We are grateful to the many beekeepers and wax shippers who patronize us.

When the writer took over, some 50 years ago, we advertised: "When you ship us your honey or wax, remittance will be mailed the day shipment arrives." This statement is still on the top of our NEW YEAR'S resolutions. We assure every one that this wonderful resolution will continue as in past years.

We wish every one of you a HAPPY NEW YEAR. May we hear from you often.

The Fred W. Muth Co.

Fred W. Muth, President
Pearl and Walnut Sts.
CINCINNATI, O.

NOTICE, PLEASE

We are booked to capacity for 1944. Save yourself delay and us extra work by not sending orders. To those for whom we have orders booked, many thanks; to others, our sincere regrets.

ROSSMAN & LONG

P. O. Box 133 Moultrie, Ga.

ITALIAN QUEENS

We have extra queens this Spring. Sorry, no packages as we are completely booked. Send us your queen orders. Prompt reply. Start shipping April 1st.

Queens - Postpaid - Disease free
Guaranteed Delivery.

1-25 ..... $1.00
25 up 0.90

SUNKIST BEE CO.
Rt. 2, Box 9, Houma, La.

$1 GARDEN SEEDS FREE
To the first 1000 who order through this notice, we'll send FREE $1.00 in garden seeds. Write for our "Lucky 7" offer and catalog today.
BERRY SEED CO., 282F Clarinda, Iowa

The Monthly Honey Market

U. S. GOVERNMENT REPORT
Information from Producing Areas
SUMMARY, January 15, 1944

Weather conditions continued favorable for the wintering of bees in most sections of the country during the latter part of December and early January. Moisture conditions were somewhat improved in the Pacific Coast States, the Southwest, and Southeast. The Plains Area from the Rocky Mountains to the Great Lakes, and southward into Iowa, Nebraska and Colorado still continues very dry. A number of States in this area report the most severe winter drought conditions on record. Throughout this area plants may be suffering not only due to the drought but also because of the fact that in many widespread areas the ground was deeply frozen without any snow covering. Except for this drought area plant conditions are good, with prospects possibly a little better than were indicated a year earlier. This is especially true in southern California, Texas, and Louisiana where ample rains have fallen since early December. In the North Central and Plains Areas considerable concern is felt over the decrease in sweetclover acreage, partially as a result of the use of sweetclover land for other crops and in some sections as a result of increased weevil infestation.

In the extreme Southeast and Gulf Coast States broodrearing is beginning in a limited way—a little later than normally. Pollen plants are coming on slowly. In this package bee and queen producing area labor shortage is expected to be acute this

HONEY WANTED

Carloads and less. All grades. Pay cash. Can furnish containers.

J. W. REITZ & BROS.,

Summerfield, Florida

SOY BEAN FLOUR—POLLEN SUPPLEMENT

We have made arrangements with the manufacturer for distribution of their Soy Flour for beekeepers. This is the Lo-Fat, High-Protein expeller type flour. Write for prices.

Killion & Sons Apiaries
Paris, Illinois

CHOICE ITALIAN QUEENS and package bees.

We have been furnishing queens and package bees through other shippers. Let us furnish yours direct. Write for prices.

CLIFTON APIARIES
P. O. Box 684, Oroville, Calif.

Look for This Sign
QUALITY at LOW COST
When You Want

Trade Mk. Reg. U. S. Pat. Off.

KELLEY—"The Bee Man"

Glass - Tin

16 oz.	Economy Jars, carton 24 each,	$0.70
32 oz.	Economy Jars, carton 12 each,	.42
5 lb.	Economy Jars, 12 cartons	5.00
	24 cartons	9.95
60 lb.	Square tin cans, carton of 16	5.40

Quick shipment from large Paducah stock.

New Price List

Write for 1944 price list. We now have many items that have been short for some time. Prices remain steady except on bees. All stocks are low so order early.

THE WALTER T. KELLEY CO.

Paducah, Kentucky

season. Many package bee and queen producers have been booked to capacity for some time, and northern beekeepers report that it is becoming increasingly difficult to place orders for spring delivery of either package bees or queens. This fact may be a determining factor in plans being made for expansion of beekeeping operations next season. Present indications are that for the country as a whole there will be very little increase in the number of colonies, although some individual beekeepers indicate that they plan some increase provided bees and labor can be obtained.

Supplies of domestic honey are becoming increasingly scarce. Many sections indicate some decrease in demand for honey, both from large buyers and consumers. More cane sirups have appeared on the market recently and have possibly filled some of the recent heavy demand for honey, particularly in view of the lower prices for the sirup. There has been no change in the prices on either honey or beeswax.

In a revision of WPB General Imports Order M-63, effective January 12, honey which for more than a year had been covered by the order was not included among those commodities for which import licenses would be required. Import license authorizations will no longer be required to bring in honey from any country. The shipping priority on honey will remain the same as at present, but the importation will be solely a matter of arrangement between the buyer, seller, and transportation company.

Imported honey and imported sirups containing honey do, however, continue to be subject to the provisions of FDO 47 amendment 1 and 47.1, the same as domestic honey. When selling honey to manufacturers, their attention should be called to the fact that under the honey limitation order they are restricted in the use of honey to 600 pounds per quarter or 120 percent of the amount used by them during the corresponding quarter of 1941, whichever is greater. The quantity of honey in honey sirup is chargeable against "honey use quotas" the same as straight honey.

Monthly Report of Honey Producers

Early in January we sent the following questions to honey producers: 1. What percent of the honey produced in your locality has already left the hands of the producers? Give answer in percent. 2. At what price has honey been sold or contracted for, if any, in large lots (carload or less) in your locality during the past month for (a) extracted per pound? (b) comb honey, Fancy and No. 1, per case? 3. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey Fancy and No. 1, per case? 4. What is the retail price to customers in your locality of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey. Fancy and No. 1, per section? 5. How is honey moving on the market in your locality? Give answer in one word, as slow, fair or rapid. 6. How does the number of colonies to be wintered in your locality compare with that of last year? Give answer in per cent. 7. What is your estimate of prospects for a normal honey crop in 1944, considering the present condition of the bees and the honey plants? Give answer in percent of average crop for your locality. The answers received are tabulated as follows:

		1	2		3		4		5	6	7
Jan. Date Rec.	State Name	Pct. Sold	Large Lots Ex.	Cb.	To Grocers Ex.	Cb.	To consumers Ex.	Cb.	Movement	% wintered	1944 Crop Prospects
12	B. C. (A. W. Finlay)	95							Fair	120	
10	S-Calif. (L. L. Andrews)	90						.30	Rapid	100	Good
13	SE-Colo. (Otis E. Adcock)	90							Slow	100	100
8	E-Conn. (Allen Latham)	60						.33	Rapid	95	
10	S-Fla. (C. C. Cook)								Rapid	125	100
10	C-Fla. (Harry Hewitt)	99							Rapid	110	100
10	SE-Ga. (J. J. Wilder)	100								100	100
10	NC-Ills. (A. L. Kildow)	95			4.00			.18	Fast	90	
7	S-Ills. (Carl E. Killion	100							Rapid	75	75
6	NC-Ind. (T. C. Johnson)	95			6.00			.33	Rapid	100	100
6	NW-Ind. (E. S. Miller)	95						.35	Fair	85	95
8	W-Iowa (E. G. Brown)	95							Rapid	80	75
10	C-Md. (S. G. Crocker)	100						.30	Rapid		50
	E-Mich. (L. S. Griggs)	100						.25	Fair	70	75
8	S-Mich. (Floyd Markham)								Fair	90	85
11	S-Mich. (E. D. Townsend	95							Rapid	90	60
7	SW-Minn. (L. A. Syverud)							.33	Fair	110	100
13	W-Minn. (B. Morehouse)	95							Rapid	90	100
11	W-Nev. (Mrs. E. Norton)	100							Fair	90	60
11	W-Nev. (Geo. G. Schweis)				4.50			.25	Fair	100	100
14	W-N.Mex. (C. A. Baltzley)	55						.43	Rapid	100	100
7	W-N.Y. (Adams & Myers)	100		6.00			6.00	.38	Fair	90	100
7	NW-N.Y. (Geo. B. Howe)	75							Slow	100	
7	C-N.Y. (F. W. Lesser)	95							Slow	110	100
12	NW-N.C. C. S. Baumg'ner	100							Slow	50	100
6	C-Ohio (R. D. Hiatt)	90							Slow	105	75
11	NC-Okla. (C. F. Stiles)	99							Rapid	95	80
11	C-Penn. (Harry Beaver)	80			6.00			.27	Rapid	90	
8	SE Pa. (D. C. Gilham)	50			5.40			.32	Rapid	80	
6	C-Tenn. (J. M Buchanan)	100							Fair	110	100
11	C-Texas (T. A. Bowden)	95							Rapid	75	100
11	S-Texas (C. G. Mayes)	95								80	75
11	S-Texas (H. B. Parks)	90							Rapid	110	100
7	S-Va.(L. N. Gravely)	98			9.60			.46	Rapid	85	75
11	SE-Wisc. (N. E. France)	90							Slow		
11	N-Wyo. (Earl C. Reed)	95							Fair	110	75

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10-fr. Hive Bodies and Frames, lots of 5		6.65
Hoffman Brood Frames, per 100		5.05
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25-lb. Hercules Plain Brood 8x16¾ or 8½x16¾		17.50
25-lb. Thin Surplus Foundation 3⅞x16		19.75
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2" Hive Staples, per lb.		.30

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